

TITANINE DOPE

18 Edit.
3 1/2 Col. Small
See
Advert.
page 16

FIRST AERO WEEKLY IN THE WORLD

FLIGHT

The
AIRCRAFT
DOPE

Aircraft. Engines. Access & Tyres. Prep. & Misse.
10 6 1/2 10 1/2 3

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1064. (No. 20. Vol. XXI.)

Registered at the General Post Office as a Newspaper

MAY 16, 1929.

SIXPENCE WEEKLY.

Flying in Fog

"We saw nothing but the floor of cloud-tops beneath us from half-an-hour after leaving Le Bourget until we arrived at Croydon, but . . . with a multiple-engine machine and wireless direction finding, the risk of having to make a forced landing is negligible."

—CAPTAIN O. P. JONES, of Imperial Airways, in an EVENING NEWS interview.

All Imperial Airways machines, and the London Airport, are equipped with Marconi apparatus

MARCONI'S WIRELESS TELEGRAPH COMPANY LTD., MARCONI HOUSE, STRAND, LONDON, W.C.2

MALLITE PLYWOOD

Telephone:
BISHOPSGATE
5841
(4 lines).

USED BY THE LEADING AIRCRAFT MANUFACTURERS

THROUGHOUT THE WORLD.

Telegrams:
VICPLY
KINLAND
LONDON.

Manufactured to the BRITISH AIR MINISTRY SPECIFICATION, 2.V.3., by

THE AERONAUTICAL & PANEL PLYWOOD CO., LTD., 218-226, KINGSLAND ROAD, LONDON, E.2.

PALMER

Landing Wheels and Tyres
Designed for —
not adapted to —
Aeroplanes.

The Palmer Tyre, Ltd., 100-106, Cannon Street, London, E.C.4. 447

CELLON LTD.

CONTRACTORS TO
H.M. GOVERNMENT

Cellon Works, Upper Ham Road,
Kingston-on-Thames.

Telegrams: "AJAWB, Phone, Kingston-on-Thames."
Telephone: Kingston 6061 (5 lines).

CELLON

DOPE

Bristol



GOOD GROUND SERVICE IS
ESSENTIAL IF HIGH PER-
FORMANCE IN THE AIR IS
TO BE MAINTAINED.

Below are a few of the outstanding points in the design of the
"BRISTOL" BULLDOG
SINGLE SEATER FIGHTER
which facilitate ground service.

Excellent accessibility to all mechanical parts.

Simplified lubrication system.

Quick detachability of components—such as
wheels, oleo-legs, tail plane, tail skid, wing tanks.

Easily repaired structure of steel strip sections.

Quick adjustment of guns and stowage of
ammunition.

Simple rigging and positive checking.

THE BRISTOL AEROPLANE CO., LTD.,
FILTON — BRISTOL.

Telegrams: "Aviation, Bristol."

Telephone: 3906 Bristol.

Kindly mention "Flight" when corresponding with advertisers.



The Aircraft Alloy
"Vickers' Duralumin"
 (Registered Trade Mark.)

STRENGTH COMBINED WITH LIGHTNESS.

AN alloy with the strength and hardness of Mild Steel, but having only one-third of its weight, and possessing excellent machining qualities.

Specific Gravity, 2.8.
 Tensile Strength up to 35 tons.
 All enquiries to—

JAMES BOOTH & COMPANY (1915) LIMITED
 Argyle Street Works, Nechells,
BIRMINGHAM.
 Telephone: East 1221 (Private Branch Exchange).
 Cable: Lieber's 5 Letter Code. Telegrams: "Booth, Birmingham."
 Bentley's Code, A.B.C. 5th and 6th Edition.

Strength without Weight.

That is the most important feature of our **MAGNESIUM ALLOYS**—they have the strength demanded for numerous automobile and aircraft purposes, yet they are 40% lighter than aluminium alloys.

We can supply these **MAGNESIUM ALLOYS** in the form of Forgings and Castings with the following tensile figures:—

Forgings: 20-22 tons per square inch.
 Castings: 10-12 tons per square inch.

PLEASE WRITE US FOR FURTHER PARTICULARS.

British Magnesium
 LTD.

Point Pleasant, Wandsworth,
 LONDON, S.W.18.

Telegrams: "Ognesiuma, Put, London."

Telephone: Putney 4807.

A BOOK TO BUY AND KEEP.

THE

Baghdad Air Mail

By Wing-Commander RODERIC HILL, M.C.

With Illustrations and Maps.

18s. net.

An absorbing record of difficult flying in ancient and romantic lands and of the making of a great modern airway.

London: EDWARD ARNOLD & CO., 41, Maddox St., W.1

PACKERS & SHIPPERS OF AEROPLANES, ENGINES, MACHINERY, MOTOR-CARS, ETC.

The most extensive packing, shipping and storage riverside depot above bridges.

Aeroplanes, etc., collected, packed and delivered to F.O.B. Steamers.

Through rates to all parts of the world.

Eight cranes lifting up to 12 tons.

Bonded warehouses for imported cars, etc.

JOSEPH C. MOUNT & CO.,

(Established for upwards of Quarter of a Century)

Stevenage Wharves, Fulham, S.W.6.

Phone: PUTNEY 2840 (3 lines).



The **BRITISH** way to—

FRANCE

SWITZERLAND

ITALY

GREECE

EGYPT

PALESTINE

IRAQ

PERSIA

INDIA

and the

FAR EAST

IMPERIAL AIRWAYS

AIRWAYS HOUSE

CHARLES ST. S.W.1

Telephone: REGENT 7861

Telegrams: IMPAIRLIM

Ad. 406

Save time by using the Air Mail.

1st NON-STOP FLIGHT ENGLAND TO INDIA



IN their flight from Cranwell, England, to Karachi, India, a distance of approximately 4,130 miles in 50 hours 48 minutes, Squadron Leader Jones-Williams, M.C., R.A.F., and Flight-Lieutenant Jenkins, O.B.E., D.F.C., D.S.M., R.A.F., on the Fairey Long-Range monoplane, fitted with a Napier "Lion" engine, have established, subject to official confirmation, British records for duration and distance in a straight line.

FAIREY AIRCRAFT

THE FAIREY AVIATION COMPANY, LIMITED,
HAYES, MIDDLESEX.

Kindly mention "Flight" when corresponding with advertisers.

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1064. (No. 20. Vol. XXI.)

MAY 16, 1929

Weekly, Price 6d.
Post free, 7d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.
Telephone: Holborn 3211. Telegrams: Truditur, Westcent, London.

Annual Subscription Rates, Post Free.

United Kingdom .. 30s. 4d. Abroad .. 33s. 0d.*

* Foreign subscriptions must be remitted in British currency.

CONTENTS

Editorial Comment :	PAGE
Olympia	395
British Firms and Empire Requirements	396
Verville "Air Coach"	397
The Fiat "A.S.1" Light 'Plane	400
Aircraft at the Milan Exhibition	401
Simmonds Spartan and Blackburn Bluebird Selected for National Flying Services	402
Hughes-Waage Course Corrector	403
Airisms From the Four Winds	405
Private Flying: Amongst the Light 'Plane Tourists	406
Light 'Plane Clubs	408
Eddies	410
Royal Air Force	411
In Parliament	411
Imports and Exports	412

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1929.

- May 19-20.... Vincennes Aviation Meeting.
- May 20 Norfolk Air Display.
- May 20 Northampton Air Pageant.
- May 23 Lecture, "Lubrication of Aircraft Engines," by F. A. Foord, before R.Ae.S. and Inst.Ae.E.
- May 23- June 8 Royal Tournament, Olympia.
- June 9 Cambridge Air Meeting.
- June 19-22 F.I.A. Conference, Copenhagen.
- June 27-30 Rotterdam International Air Meeting.
- July 5-6 King's Cup Race.
- July 13 R.A.F. Display at Hendon.
- July 16-27.... 7th International Aero Exhibition, Olympia.
- July 25 Bleriot Cross-Channel Flight Anniversary Fete, Calais.
- July 28 International Flying Meeting, Sweden.
- Aug. 1-14.... French Light Plane Meeting, Orly.
- Aug. 15 International Balloon Race, Poland.
- Sept. 6-7 Schneider Trophy Race, Solent.
- Sept. 10-20 Aero Club de France Meeting, Le Baule.
- Oct. 1 Gordon-Bennett Balloon Race, St. Louis, U.S.A.
- Oct. 31 Guggenheim Safe-Aircraft Competition Closes.

EDITORIAL COMMENT



THAT the forthcoming International Aero Show at Olympia will be one of the largest and most interesting ever held in Europe, and certainly by far the finest aero show we have ever had in this country, is already obvious, although definite decisions concerning types to be exhibited have not yet been made by several firms. Machines will range in power from tiny single-seaters with 30-h.p. engines to 40-seater passenger carriers with multi engines totalling something like 2,000 h.p. The light 'plane two-seater which has, so to speak, conquered the world during the last two years or so, will be well represented, but perhaps to many the chief interest will be found in the lower-powered machines, which will make their first public appearance at Olympia. For the first time the flying enthusiast who cannot afford the two-seater will have a choice of several cheaper single-seaters.

It should not be forgotten, however, that the great majority of the British aircraft firms do not cater for the civilian market at all, but concentrate exclusively on service types. And in this connection it would appear that certain difficulties may arise. Very naturally, the constructors will wish to exhibit their latest types in order not to be left behind in the quest for orders from abroad, and one can foresee differences of opinion between constructors and the Air Ministry in the matter of what it is and is not permissible to exhibit.

The rule in force at present is that until a machine has been thoroughly tested at Martlesham, and either accepted for production or rejected as the case may be, the machine is on the "Secret List" of the Air Ministry. The transfer of a machine from the "Secret List" to the "Part Publication List," and finally to the "Open List," follows a certain definite routine, and it is to be feared that unless the Air Ministry officials concerned with these matters be permitted to cut a few yards of red tape, many a good machine may be kept out of Olympia, which, by the use of a little discretion and commonsense, might otherwise be permitted to show itself to an admiring public. That a certain amount of secrecy

must be maintained is obvious, and no one will complain of the fact, but regulations which depend for their observance and enforcement upon routine procedure are apt to lead occasionally to anomalies such as, to take an example, prohibiting the technical press from describing briefly a machine, although that machine has been examined in detail by all the foreign air attachés. The Government departments concerned, mainly, of course, the Air Ministry and the Admiralty, must be willing to "stretch a point" in their interpretation of the regulations if the military section of the Olympia show is to be worthy of our constructors and of the Empire.

❖ ❖ ❖

The Prince of Wales has spoken often and convincingly on the subject of studying the requirements of the British Dominions, in order to retain for Britain that interchange of commodities which is so essential to the well being of the Empire. His Royal Highness did not, of course, refer specifically to aircraft and aviation material, but the fundamental truth of his remarks applies as strongly to this as to any other sphere of industry. The British aircraft industry has often been accused of lack of enterprise. With that view we personally have never agreed. The time has not been ripe hitherto for expensive propaganda in distant parts of the Empire, and types of aircraft of the right sort have, in many instances, been lacking. Now, however, things are definitely on the mend, and the time has undoubtedly come when this country must make a determined effort

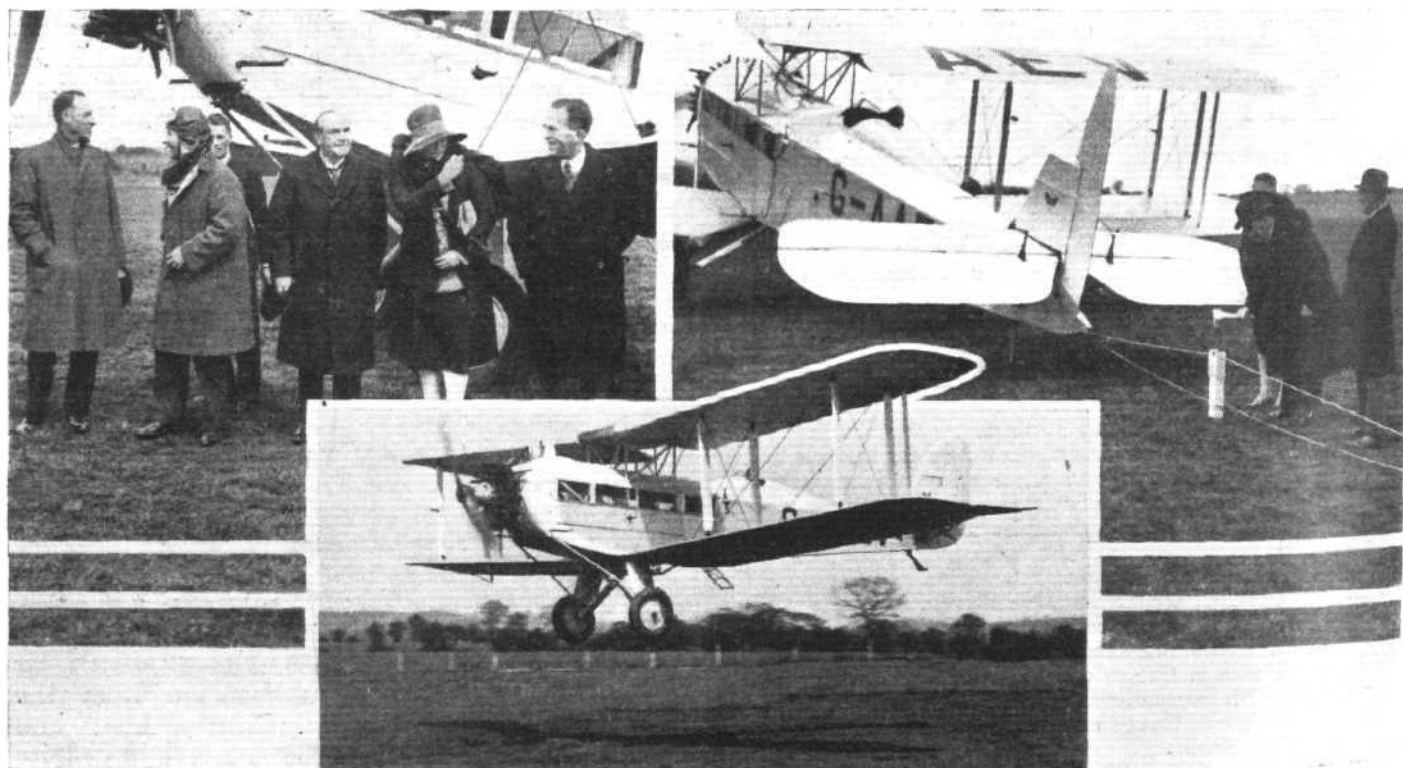
**British Firms
and Empire
Requirements**

to lay itself out to cater for the requirements of the British Dominions. Types of aircraft are in existence, or are nearing completion, which should meet all the requirements of almost any part of the Empire. And it will not do to delay for long if other countries, and particularly the United States, are not to step in and supply the needs of our Dominions.

We have before us a letter from a firm in Australia, in which the complaint is made that it has been found extremely difficult to secure the Australian representation of British aircraft material. Not only so, but the letter states that it is difficult to obtain from British firms particulars, literature, &c., dealing with their various articles and commodities. The letter continues: "We are not at all anxious to handle American aircraft or materials, but it is extremely difficult to resist the attractive printed matter and enticing propositions, which are so well presented by them. . . . While things are not exactly booming with the aircraft industry in Australia, there are definite signs that the industry is about to progress on a sound footing."

What is true of Australia is equally true of most other British Dominions, and there is no gainsaying the fact that instant action is called for. The Olympia aero show will provide a splendid opportunity for Empire propaganda, and FLIGHT will do all that is in its power to assist by describing very fully all the British aircraft, aero engines and aero accessories exhibited at Olympia, so that readers throughout the world who are unable personally to visit the Show may at least learn as much as possible about the various exhibits.

◆ ◆ ◆ ◆



[" FLIGHT " Photographs]

"YOUTH OF BRITAIN": This is the name given to the de Havilland "Giant Moth" (D.H.61) with Armstrong Siddeley "Jaguar" engine on which Sir Alan Cobham has just started a tour of Britain. On this tour Sir Alan will encourage "airmindedness" by giving passenger flights to a number of people. Our photographs show Sir Charles Wakefield "launching" the "Youth of Britain," a group at the launch, including, from left to right, Capt. de Havilland, Sir Alan Cobham, Mr. St. Barbe, Sir Charles Wakefield, Lady Cobham, and Sir Sefton Brancker, and, below, the machine in flight, piloted by Sir Alan Cobham.

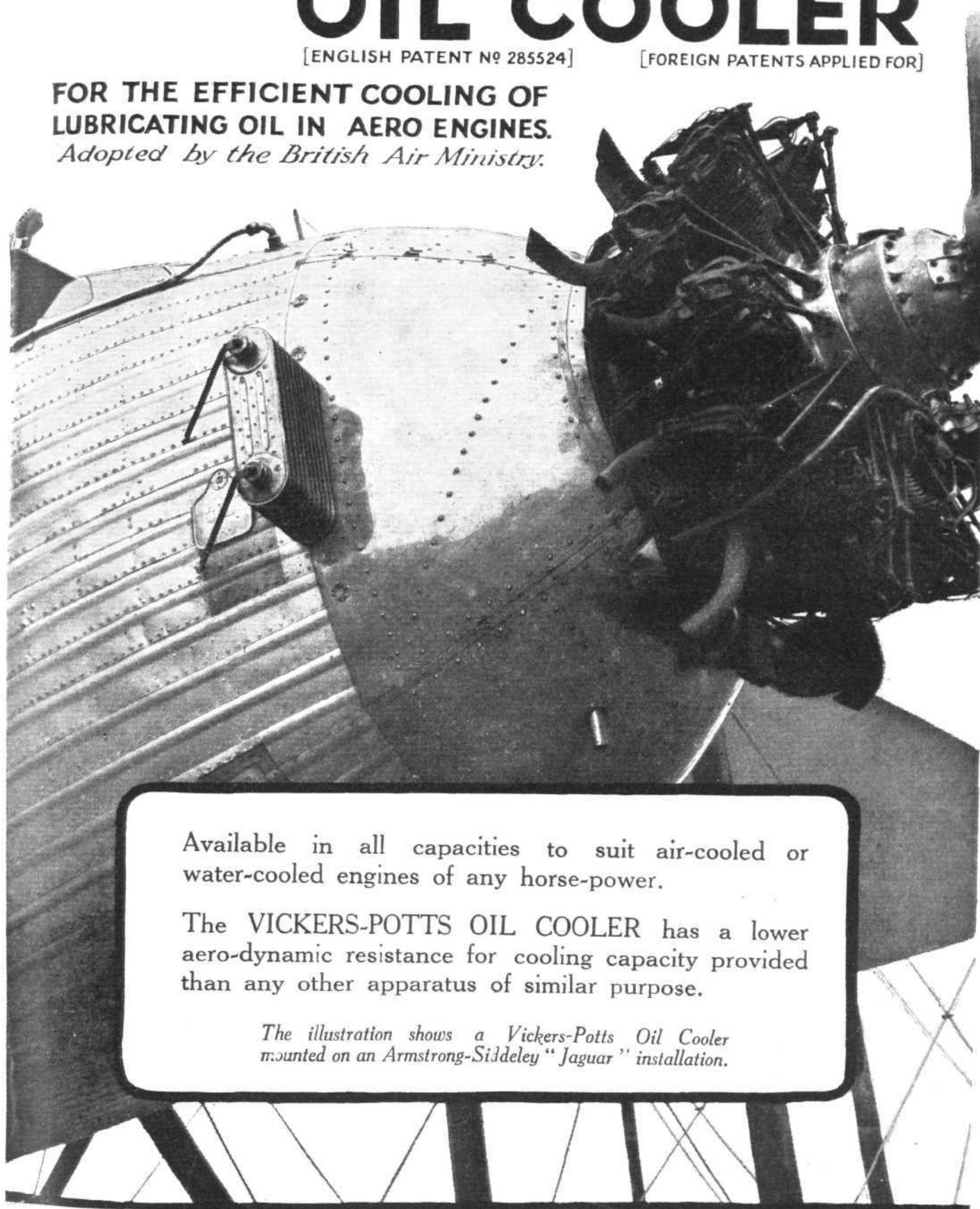
VICKERS-POTTS OIL COOLER

[ENGLISH PATENT NO 285524]

[FOREIGN PATENTS APPLIED FOR]

**FOR THE EFFICIENT COOLING OF
LUBRICATING OIL IN AERO ENGINES.**

Adopted by the British Air Ministry.



Available in all capacities to suit air-cooled or water-cooled engines of any horse-power.

The VICKERS-POTTS OIL COOLER has a lower aero-dynamic resistance for cooling capacity provided than any other apparatus of similar purpose.

The illustration shows a Vickers-Potts Oil Cooler mounted on an Armstrong-Siddley "Jaguar" installation.

VICKERS [AVIATION] LIMITED,

WORKS:
WEYBRIDGE,
SURREY.

**VICKERS HOUSE,
BROADWAY, LONDON, S.W.1.**

TELEGRAMS:
VICKERS, SOWEST,
LONDON.

Save time by using the Air Mail.



“CIRRUS” NATIONAL FLYING STANDARDISE

National Flying Services Ltd., after prolonged investigation and exhaustive tests of different types of light aircraft engines, have decided to standardise on CIRRUS ENGINES.

National Flying Services Ltd., state:—

“The selection of the ‘CIRRUS III’ engine reflects the world-wide success of the Cirrus models. The high esteem in which the Cirrus engine is held as the result of years of faultless service in all parts of the world, and of many successful long-distance flights, was a decisive argument in its favour.”



CIRRUS AERO

89, KINGSWAY

Telephone;
HOLBORN 4076.

Kindly mention "Flight" when corresponding with advertisers.

CIRRUS

SERVICES LTD.,

ON CIRRUS



The immediate provision by National Flying Services Ltd. of 22 main aerodromes throughout the country, will have the effect of providing a most important series of service stations for users of CIRRUS ENGINES.

National Flying Services Ltd. are providing CIRRUS-engined SPARTAN and BLUEBIRD aircraft for aerial tours, joy-riding, training purposes and air-taxi services.



ENGINES LTD.,

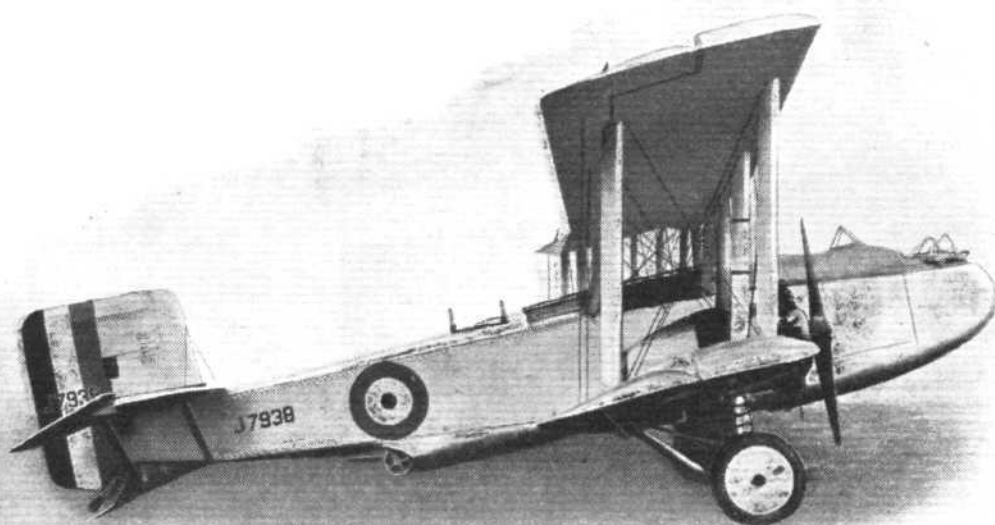
LONDON, W.C.2.

Telegrams;
"OCIRRUSO, LONDON."

Save time by using the Air Mail.



The Boulton & Paul "Partridge" single-seater fighter of all-metal construction.



Boulton & Paul All-Metal "Sideshow" Day Bomber. Chosen recently after exhaustive tests as a Royal Air Force Service Machine.

BOULTON & PAUL LTD

Telegrams:
"Boulton, Norwich."

NORWICH

Telephone:
Norwich 851 (5 lines).

LONDON OFFICE: 139, Queen Victoria Street, E.C.4.

Telegrams: "Boutique, Cent. London."

Telephone: Central 4642.

Kindly mention "Flight" when corresponding with advertisers.

THE VERVILLE "AIR COACH"

An American Cabin Monoplane

WE give below a brief description, together with illustrations, of a commercial machine produced by the Verville Aircraft Co., of Detroit, Mich., and which was recently flight-tested at the Ford Airport, by William S. Brock. The Verville "Air Coach" as it is called, was designed by Mr. Alfred V. Verville—secretary and chief engineer of the company—who is an aeronautical engineer of some years'

and 16-in. in length, project horizontally from the lower longeron in the plane of the front spars. To these the forward wing brace struts and chassis oleo struts are attached. By attaching the wing struts in this manner parasite resistance is reduced, as compared with the conventional type of exposed strut bracing now in vogue. The landing gear shock struts are attached at the outer extremity of the stubs, allowing a



THE VERVILLE "AIR COACH": Front view. Note the method of attaching Oleo struts and front wing-braces.

standing, having been responsible for the design of several successful machines, amongst which may be mentioned the pursuit planes V.C.P.-1 and P.V.-1, the Verville-Sperry "Messenger," the Verville-Packard racer (1920 Pulitzer winner), the Verville-Sperry (1924 Pulitzer winner), the Buhl "Airster," etc.

The "Air Coach" is a 4-seater high-wing "semi-cantilever" monoplane, similar in general appearance to other machines of this type, but possessing several original constructional features. The most important of these is perhaps the fuselage structure, which eliminates the intersection of fuselage truss tubes intersecting the side windows and so providing a range of vision entirely free from obstructions. Unfortunately, details of this fuselage construction (a patent on which has already been applied for) are not at the moment available, but it will be apparent from our illustrations that whatever it is, an exceptionally neat job results.

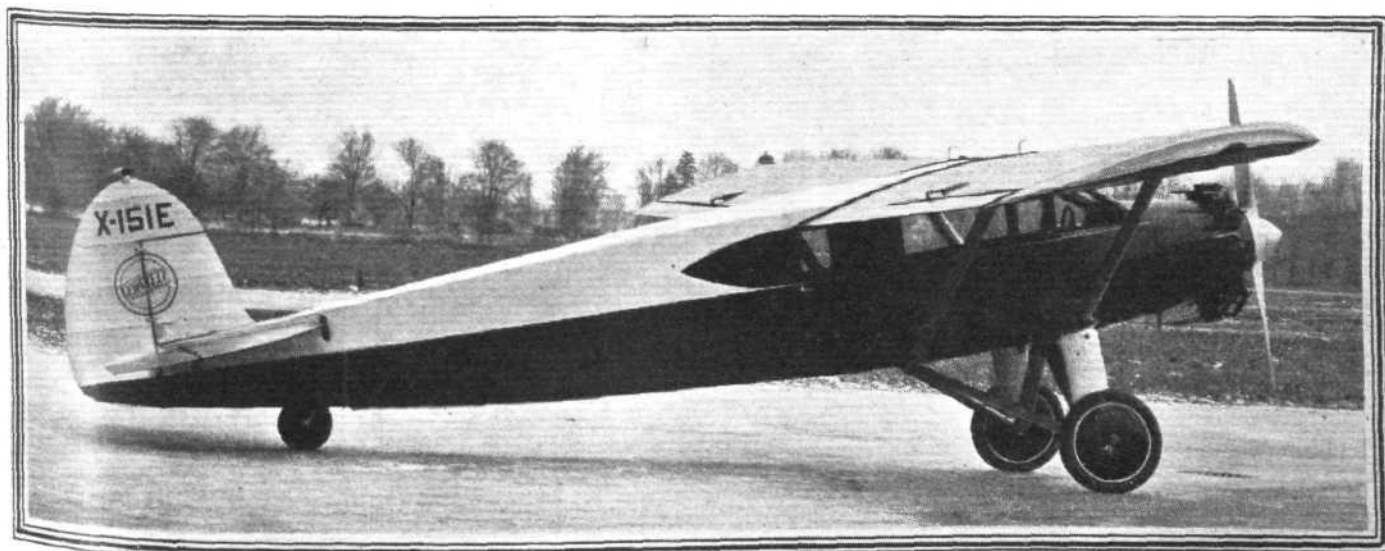
Another unusual feature is in the method of attaching the wing-brace and chassis struts on the fuselage. Two short streamline sponsons, or stubs, semi-elliptical in plan form,

7-ft. chassis wheel tread. The stubs or fins, as they might be called, also serve as small compartments 8-in. deep, with hinge doors on their top side. The left compartment will be used for the lighting battery, and the other for tools; thereby making possibility of more room in the already spacious cabin.

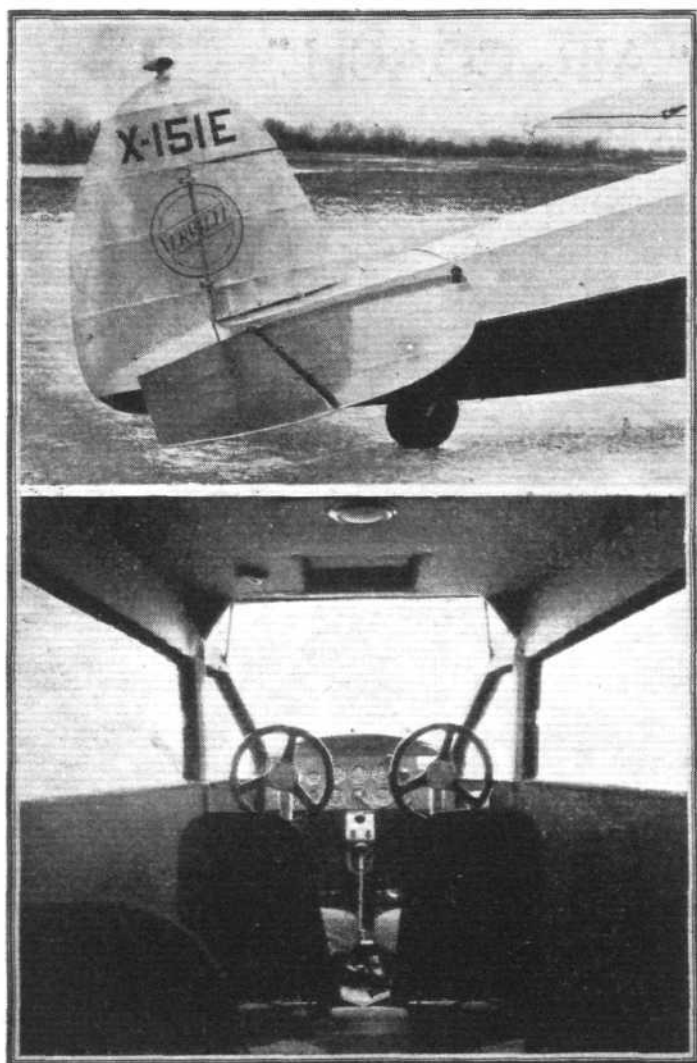
Other items distinctive in the Verville "Air Coach" include a rudder streamlined into the fuselage, and an especially designed selective and service hand brake control, allowing for easy braking of either wheel alone, or the locking of both wheels. A tail wheel equipped with full caster aerol shocks and built into the fuselage is provided to decrease drag and for simplicity and sturdiness of construction.

With his wide experience in the designing of racing and pursuit aircraft, Mr. Verville has succeeded in combining many speed producing characteristics of these types with the convenience and comfort of the modern automobile sedan.

The cabin of the "Air-Coach," in size, lines and appointments, is closely analogous to those of the modern auto body.



THE VERVILLE "AIR COACH"; Side view of this American commercial monoplane, fitted with a 110 h.p. Warner engine.



THE VERVILLE "AIR COACH" : Two views showing the neat tail unit, with wheel, and (below) the interior of the cabin.

It is completely equipped to satisfy the purpose for which the ship was built. It has a minimum length of 8 ft. and maximum length of 10 ft., the after 2 ft. being used for storage purposes. Height of the cabin is 4 ft., or the same as the average automobile sedan. Also there is an average width of 39 in. Displacement capacity in the cabin is figured at 126 cub. ft. Control wheels are mounted on upright columns, designed to make easily possible either dual or single control. The control columns are of the torque drive shaft type, with a spline connection at their base. For purposes of safety and convenience either column may be disengaged by unscrewing a knurled nut. Either column may be removed without disturbing the functioning of the controls proper.

Between the two forward seats is the braking lever. To brake the left wheel the lever is pulled to the left, exactly like the operation of a joy stick. The reverse, of course, is true when the opposite brake is applied. To apply both brakes simultaneously, and for locking the wheels, it is only necessary to press on the ball and pull the lever straight back.

Standard equipment on the dash includes a turn and bank indicator, climb indicator, compass, air speed indicator, oil pressure gauge, oil temperature gauge, altimeter, clock, instrument lights, and all light switches, and a Scintilla magneto switch. Except for the magneto switch, all the plane's instruments are Pioneer, and nicely centred on a 27 in. by 9 in. crackle varnished dural board. The throttle is of the push and pull type.

As previously stated, the cabin has a large expanse of unobstructed vision, both on the front and sides. Pittsburgh shatter-proof "Duplate" glass is seated into the windows by a method similar to that used in automobile body construction. The side windows slide back and forth, easily converting the plane into an open job. Two doors, also fashioned after those of the automobile, are located abreast of one another aft of the two rear seats, allowing easy ingress or egress. Two large skylights, fitted with green pyralin, are set in tandem in the cabin roof, between which is the cabin's electric light. On the back wall of the cabin is a door, 18 in. by 12 in.

in dimension, and equipped with Cinch fasteners for inspection of the tail's interior.

The four seats in the cabin are bolted to the tubular structure of the fuselage. All upholstery is of Laidlow's broadcloth, red below the belt line, and grey above it, except for the seats, which are entirely red. A mat of woven automobile type is laid over the floor. There are four pockets, one on each door, and one on each side wall forward of the doors. Ternstedt hardware is used throughout the cabin.

The wing struts are of streamline duralumin tubing. The after struts, being attached to the lower longerons forward of the two side doors, and in line with the fuselage cross tubes to which the drag struts of the split type landing chassis are also attached. This arrangement contributes to the simplicity of construction that is characteristic of the entire ship. The wings employ double internal drag bracing; the internal drag struts being of steel tubing. The leading edge of the wing is covered with Alclad. The wings are attached to the fuselage with trunnion-type fittings; the span is 40 ft., chord, 6½ ft, giving a total area of 260 sq. ft., and the wings are rigged 2 degrees dihedral—the wing strut being attached with screw terminals at the top of the struts, allowing dihedral adjustments from zero to 3 degrees. Wing tips are slightly curved, and equipped with navigation lights.

Ailerons are of the Friese type, and are operated by push-and-pull tubular controls—total aileron area is 26 sq. ft. The aileron hinges are attached to triangular tubular supports, which in turn are attached to the rear spar and the four drag stations, making a total of four aileron hinge supports. All the control hinges throughout the ship are fitted either with bronze or oil-less bearings.

Structurally, the rudder is of the balanced type, and has an area of 9 sq. ft. It is fastened to the vertical fin with two hinges equipped with oil-less bearings, the fin being of full cantilever construction. Elevators and stabilisers on the air-coach are built in two parts, both front and rear spars of the stabiliser being fastened on two fuselage stub spars by means of two bolts. The elevators have a total area of 14 sq. ft., that of the stabiliser being 20 sq. ft., while that of the fin is 4 sq. ft. Right and left elevators, and right and left stabilisers are interchangeable. The tail surfaces, as well as the ailerons, are constructed of chrome molybdenum tubing.

The horizontal stabiliser is provided with an incidence adjustment, having a range of from zero to 3°, plus or minus. This can be operated from the cabin.

The fuselage, which is constructed of chrome molybdenum steel tube, with a truss of the diagonal tubular brace type, is of very pleasing lines, sloping gracefully from the level of the wings at the cabin to the tail. Forward of the cabin, two diagonal truss members slant forward and inward from the fuselage, at the leading edge of the wing, down to the fuselage at a point just behind the engine section. These struts form a support, as well as a wind shield or front window, for the cabin.

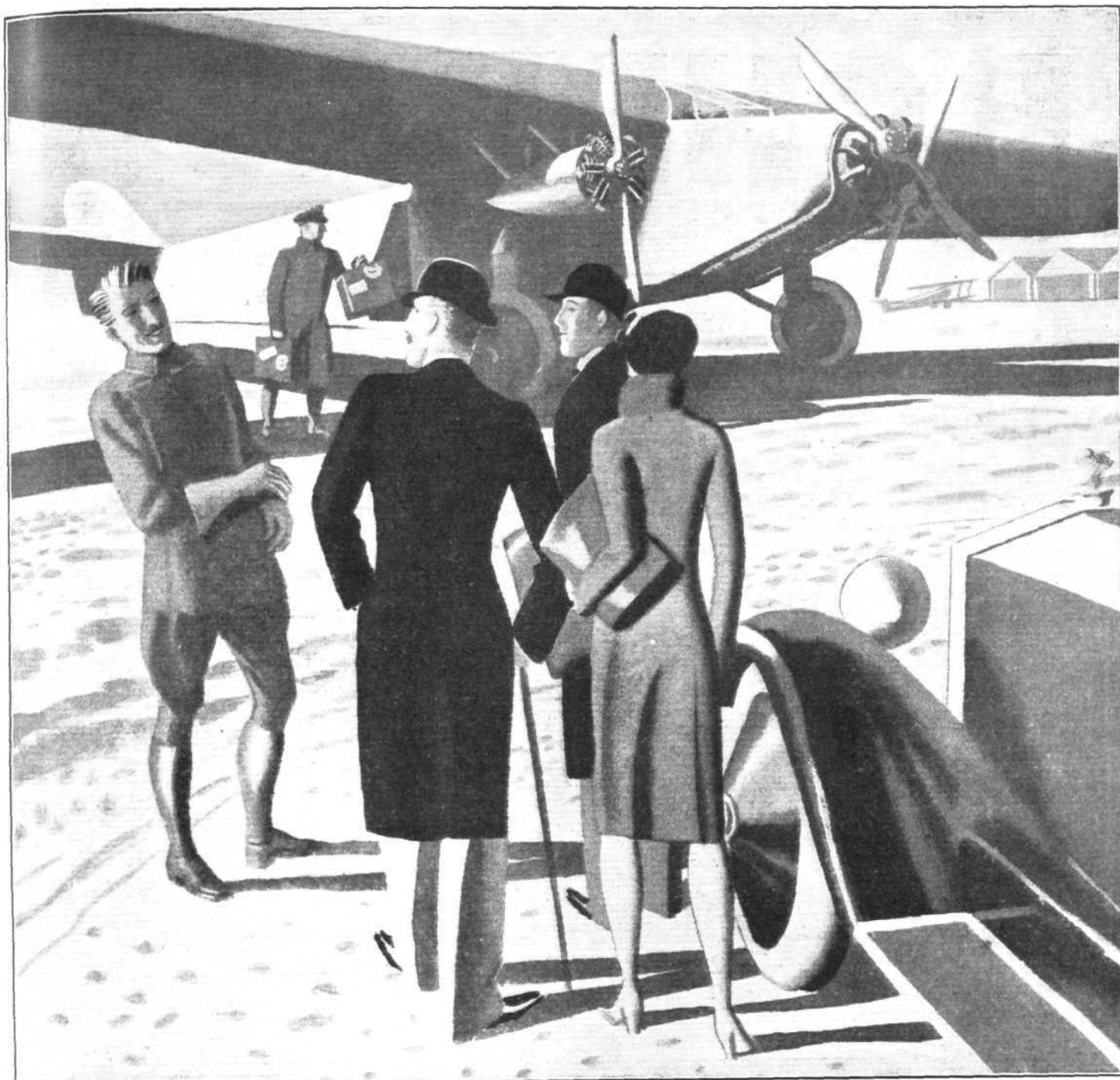
The specifications of the Verville "Air coach," as supplied by the manufacturers, are :—

	110 h.p. Warner.	150 h.p. Wright.
Wing span	40 ft.	41 ft.
Length overall	28 "	28 "
Height overall	7 "	7 "
Wing area	265 sq. ft.	265 sq. ft.
Aileron area	26 "	27 "
Rudder area	9 "	9 "
Elevator area	14 "	14 "
Stabiliser area	20 "	20 "
Fin area	4 "	4 "
Incidence	None.	None.
Weight empty	1,525 lbs.	1,750 lbs.
Normal gross weight (loaded)	2,400 "	2,900 "
Disposable load	875 "	1,150 "
High speed	110 m.p.h.	125 m.p.h.
Landing speed	45 "	48 "
Fuel capacity	50 galls.	70 galls.
Cruising range	600 miles	600 miles.

The dimensions for Curtiss Challenger model will remain same as for Wright.

In the "Air Coach" illustrated, a 110-h.p. 7-cylinder air-cooled radial Warner engine is installed, but the 150-h.p. 5-cyl., the 225-h.p. 7-cyl. Wright engines can also be fitted. We understand that the 170-h.p. 6-cyl. air-cooled radial Curtiss "Challenger" can be fitted as well. With the Warner engine, a high speed of 110 m.p.h. is attained, and with the other engines, the speeds are 150-h.p. Wright, 125 m.p.h.; 225-h.p. Wright, 140 m.p.h.; and 170-h.p. "Challenger," 132 m.p.h.

A detachable mounting of the ring type is provided for



BUSINESS MEN ARE TAKING TO THE AIR

To cross London the business man uses his own car and it is now just as practical for him to travel across Europe in his own Avro 5.

The Avro 5 is equipped with three 100 h.p. Armstrong-Siddeley engines and has a cruising speed of 100 m.p.h. Its carpeted cabin contains chairs for four people. It is electrically lighted, and comfortably

ventilated. There is, in fact, everything necessary for convenient and pleasurable travelling. The Avro 5 can land in 330 yards and can be left anywhere in all weathers. To own one is to be utterly independent of all public transport arrangements and to be able to travel anywhere at any time with speed, safety and comfort.

AVRO-5

(3 ENGINED MONOPLANE)

Specifications and full particulars of the above, also of the larger Avro-10 (carrying 8 passengers) will be supplied on application. Those interested should write for free catalogue of the famous "Avian" light aeroplane.

A. V. ROE & CO., LTD., 166, PICCADILLY, LONDON, W. 1. WORKS: MANCHESTER AND HAMBLE, SOUTHAMPTON

Save time by using the Air Mail.

ROHRBACH



LOUIS

METALL

FLUGZEUGBAU

BERLIN - N 65 - KIAUTSCHOU STRASSE

Kindly mention "Flight" when corresponding with advertisers.

these engines, which are neatly cowled-in and fitted with a spinner. The cowling is securely clamped with Verville quick-release fasteners. The carburettor is fed by gravity from two elliptical welded aluminium tanks of 25 or 35 galls. capacity, located in the wing, one on each side of the fuselage. The feed lines are of $\frac{1}{2}$ -in. copper tubing, equipped with three-way valves. Lubricating oil is carried in a 5-gall. tank located in the fuselage forward of the cabin.

On the experimental machine no exhaust collector ring has been installed, although this, as well as a silencer, heater and cabin ventilator, will be standard jobs on the production models. A Heywood starter is fitted at present, but this will be interchangeable with the Eclipse type.

The landing chassis is of the split-axle type, and utilises the sponsons as bracing for the Oleo shock struts. Disc wheels with faired hub caps, and fitted with 28 by 4-in. Goodrich tyres, are used. The disc tail wheel, also employing an Oleo shock absorber, carries a 14 by 3-in. tyre of the same make. The main wheels are fitted with Bendix brakes. Landing stress is distributed through tubular pyramid trussing between the two sponsons.

The tail-wheel assembly can be removed through the bottom of the fuselage simply by loosening two nuts, while in the top of the fuselage at this point is a 24 by 10-in. hand hole for the inspection and adjustment of the wheel assembly and tail-adjustment gear.

SOME STAG LANE STUDIES



"FLIGHT" Photographs

THESE photographs are indicative of the widespread popularity of the de Havilland "Gipsy Moth." The photograph in the top left-hand corner shows five of these machines, of which four have been specially fitted to take large aerial cameras. These machines are to be employed for survey work by a newly formed Spanish company. The fifth "Moth" is a coupé type which belongs to the Duke of Estremera, and which is shown in flight in the inset. On the right are the Spanish crews of the five "Moths." From left to right, Dorronsoro, Pardo, the Duke of Estremera, Tortilla, Ruiz de Alda, Antonio Ansaldo, and Rein. In Norway also the "Moth" is finding favour, and the group in the lower left-hand corner shows three Norwegian officers on a visit to Stag Lane. They are, from left to right: Lieut. Motzfelt, chief instructor of the Norwegian Army Flying School; Mr. Gunnestad and Mr. Meyer, Norwegian Army Corps Reservists. The thrills of dirt-track racing do not preclude enjoyment of flying, and recently Col. the Master of Sempill gave passenger flights at Stag Lane to two famous motor-cyclists who are now learning to fly. Our group shows, from left to right, Mr. Frank Arthur, Col. Sempill, Mr. Billy Lamont, and Capt. H. Broad.

Hull Municipal Aerodrome

THE Finance Committee and a Joint Committee of the Parliamentary and Property Committee of Hull Corporation have decided to purchase Hedon Racecourse as a site for a municipal aerodrome at a cost of about £17,000. The

Hedon Racecourse is situated about five and a-half miles from Hull, and has not been used as a racecourse for many years. It is to the east of Hull, and only about three miles from the banks of the Humber estuary. Negotiations are also proceeding for the acquisition of a seaplane base nearby.

THE FIAT "A.S.1"

A New Italian Light 'Plane

PPRIVATE flying is officially encouraged in Italy, the Government having included in their aviation programme specially for this branch of aeronautics. With a view to assisting in the development of the Government programme, the Fiat Co. of Turin have produced a light two-seater touring monoplane, and a special 85 h.p. air-cooled radial engine, both of which we illustrate this week.

We have not at the moment, unfortunately, full details of this new machine, and can only refer now but briefly to some of its outstanding features. The A.S.1 is a parasol monoplane with a span of 34 ft. and a length of 21 ft. 9½ in. The wings, which are of fairly thick section with "square" tips, are mounted high above the fuselage to a short centre section on a vertical cabane, and are externally braced by a pair of struts each side extending from the lower longerons of the fuselage up to the wing spars at a point about midway between the wing tip and the centre of the machine. There is no other external wing bracing.

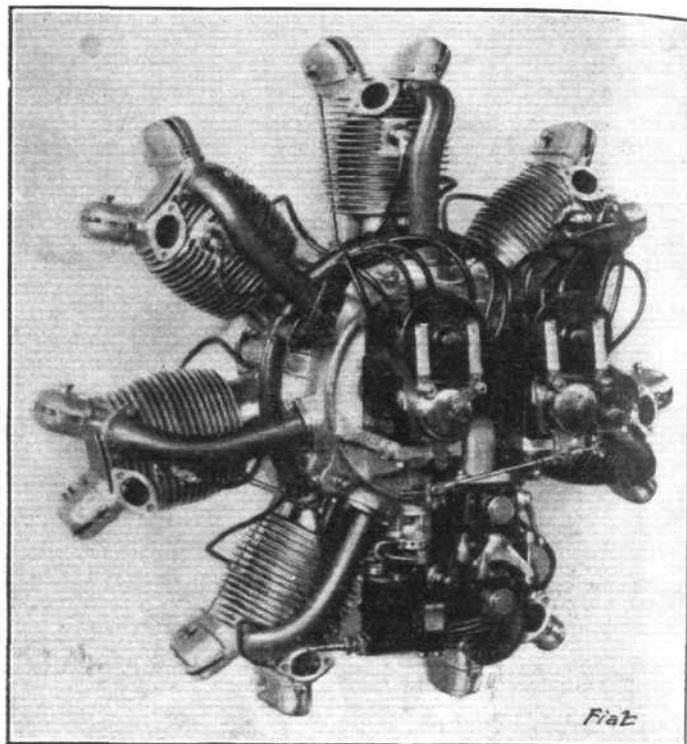
The wings can readily be folded back against the fuselage, but we do not know exactly how this operation is carried out. The ailerons, which are hinged to a false spar, are balanced by small auxiliary balance surfaces mounted below and forward of the ailerons—a system very popular with the Fiat Co. The rudder and elevators are balanced by the usual projecting surfaces.

The fuselage is of rectangular section, and we gather that the construction follows usual Fiat practice as regards the steel tube frame and that the covering is plywood. That portion of the fuselage immediately below the wings is "humped" up to the latter to form a roomy cabin. Actually, this cabin is formed by closing in the cabane with windows, the wing centre section (which by the way, also carries the fuel tank) serving for the roof.

It will be noticed that the sloping back of the "cabin" also has a window, so that the pilot has excellent vision in all directions. Access to the cabin is by way of two doors in the left-hand side of the fuselage, foot-grips being mounted on the lower longerons as well. The seats are arranged in tandem, and it is said that the noise of the engine has been reduced to such an extent that it is possible to carry on a conversation in normal tones during flight.

The undercarriage is of the conventional V-type, with shock absorbers embodied in the front struts.

The Fiat A-50 engine, which has been developed specially for this type of machine—and incidentally, the first of its kind to be built in Italy—is a 7-cyl. air-cooled radial developing 85 h.p. at 1,600 r.p.m., and 95 h.p. at 1,800 r.p.m., for



a weight of 275 lbs. Its cylinders of 3.9 by 5.51 in., bore and stroke respectively, are steel forgings with a ribbed aluminium head having two valves with special bronze seats and cast-iron guides. The overhead rocker mechanism is mounted on roller bearings. There are plain bearings for the crankshaft and the connecting rods, these being lubricated under pressure; the base chamber is being kept dry by means of a scavenger pump having 50 per cent. greater capacity than the pressure feed pump. Ignition is by two Marelli magnetos, each supplying current to a set of seven plugs. The petrol consumption is 0.5 lbs. per h.p. and the oil consumption is particularly low.

We await with interest further reports of this machine, which we understand is being produced at a moderate price and is cheap to maintain.



THE FIAT "A.S.1" : Two views of the new Italian two-seater light monoplane. It is fitted with a Fiat 85 h.p. A-50 air-cooled radial engine, which is shown in the upper illustration.

PAGE 8

SUNDAY PICTORIAL

APRIL 28, 1929

National Heroes

A11 British and-

The the a conta mo.

IT is tan: return from R no mor deserve cow "

A11

NAPIER

Aero Engine

successes where engines were used.

HARDLY any normal individual can fail to enjoy the reflected glory of a great exploit by a fellow-countryman. Last week gave us more than one cause to feel a national stimulus.

The foremost is the magnificent feat of Squadron-Leader Jones-Williams and Flight-Lieutenant Jenkins, who flew from Cranwell to Karachi in a British single-engine monoplane in a little under fifty-one hours.

Though adverse winds and want of petrol robbed the two intrepid airmen of the long-distance record they have succeeded in accomplishing the first non-stop flight to India, and have increased by an incalculable amount the prestige of British aviation throughout the world.

During the week Captain Malcolm Campbell set up two world speed records for the five miles and the five kilometres distances at Verneuk Pan in South Africa. His average speeds for the two distances were respectively 212.25 and 210.5 m.p.h.

Another speed expert, Sir Henry Segrave, who was knighted yesterday by the King, has also brought honour upon his country by creating new speed records both on land and water.

Such men have done more than show the world the merits of the British machine. The benefits they have conferred are as much psychological as material.

A nation which has once enjoyed supremacy in sport and commerce may lose heart when its laurels are one by one wrested from it by foreign rivals. Continued defeats make dispiriting diet. There have been times when Britain might have been excused for developing an inferiority complex.

It is quite probable that the Ashes victory and the Schneider Cup success have put Britons in the mood for winning. Let the man in the street has more zest for the ordinary tasks of life if he can reflect that his countrymen hold speed records and that all the best golfers do not come from America.

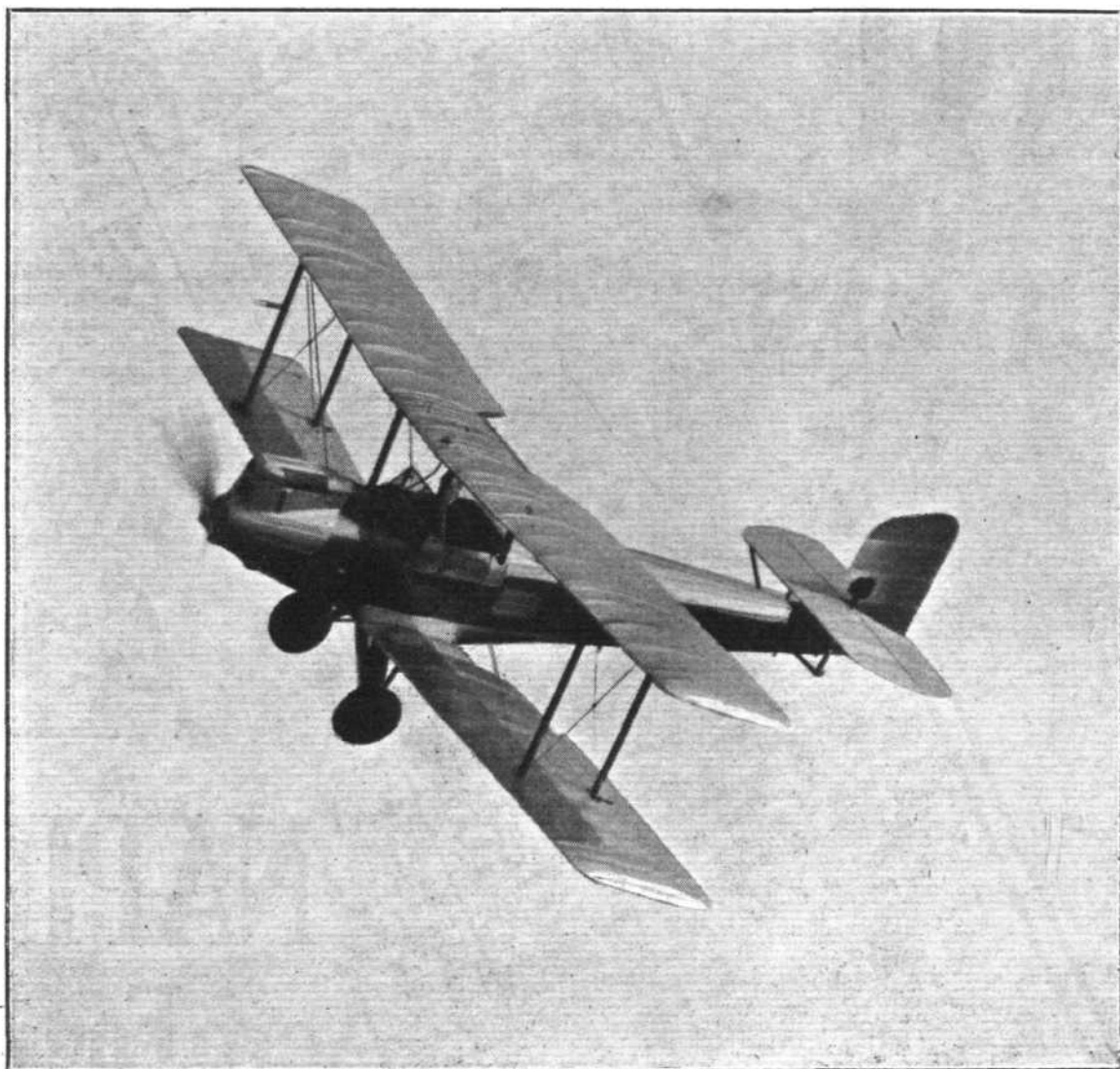
Tab:-

D. NAPIER & SON, LTD.

AND REDUCED

ACTON, LONDON, W.3

Save time by using the Air Mail.



Bluebird

The new All-Metal "Bluebird" has been chosen by National Flying Services Limited as one of the two makes of light aeroplanes to be adopted as their first standard training machines

Sole Concessionaires :

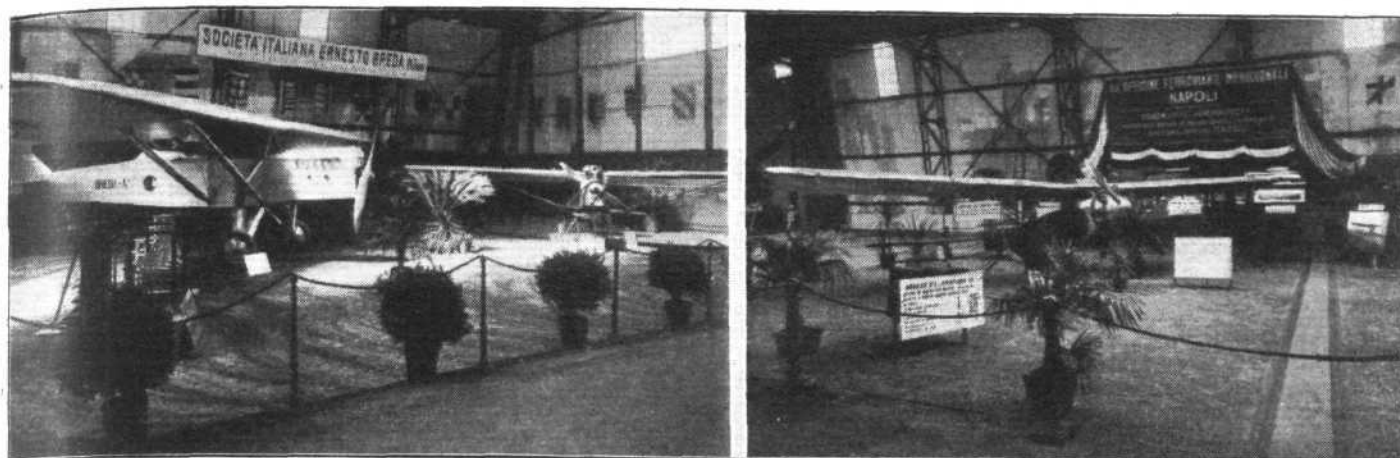
AUTO AUCTIONS LTD., HORSEFERRY RD., WESTMINSTER, S.W.1

THE BLACKBURN AEROPLANE & MOTOR COMPANY LTD.

Head Offices & Works: BROUGH, EAST YORKSHIRE.

London Office: AMBERLEY HOUSE, NORFOLK STREET, STRAND, W.C.2.

Kindly mention "Flight" when corresponding with advertisers



AT MILAN : The Breda (left) and Officine Meccaniche Meridionali Romeo (right) exhibits.

AIRCRAFT AT THE MILAN EXHIBITION

THIS year's Exhibition at Milan produced several interesting items in the aircraft section, and among the various firms showing, the most important were "Breda," "Caproni," "Fiat" and "Romeo"; while the engine section was represented by the "Isotta-Fraschini" and "Fiat" concerns. Some French engines were also there.

On the Societa Italiana Ernesto Breda stand, the first near the entrance, one saw, in addition to several photographs, etc., of the firm's standard productions, a complete Breda "15" cabin monoplane, fitted with an 80-h.p. engine—the light 'plane which we described in our issue for May 9 last. This little machine has exceptionally pleasing lines—and looks much like a small car—and it was very much admired. It is certainly a thoroughly well-designed and constructed machine, and does honour to its designer, Mr. Pallavicino.

The Breda "A.16" was another machine shown, and perhaps represents the best that came out of the Breda works. It is a single-engined two-seater reconnaissance monoplane of metal construction. Although the "A.16" is not of the latest design—it is, we believe, a development of the "A.7" which we described in FLIGHT for March 15, 1928—this machine competes very well with other types already in service. It is a high-wing or parasol monoplane, and was designed by Mr. Abbate, who has now left the Breda firm.

Next to the Breda stand was that of the Officine Meccaniche Meridionali Romeo, which firm exhibited the "Ro.5," another of the new Italian light 'planes. The "Ro.5"—which, by the way, put up a very good performance in the Italian competition for light aeroplanes—is a parasol monoplane of pleasing appearance. It is a two-seater with the passenger's and pilot's cockpits in tandem, the front, or passenger's cockpit being more or less "enclosed" under the wing.

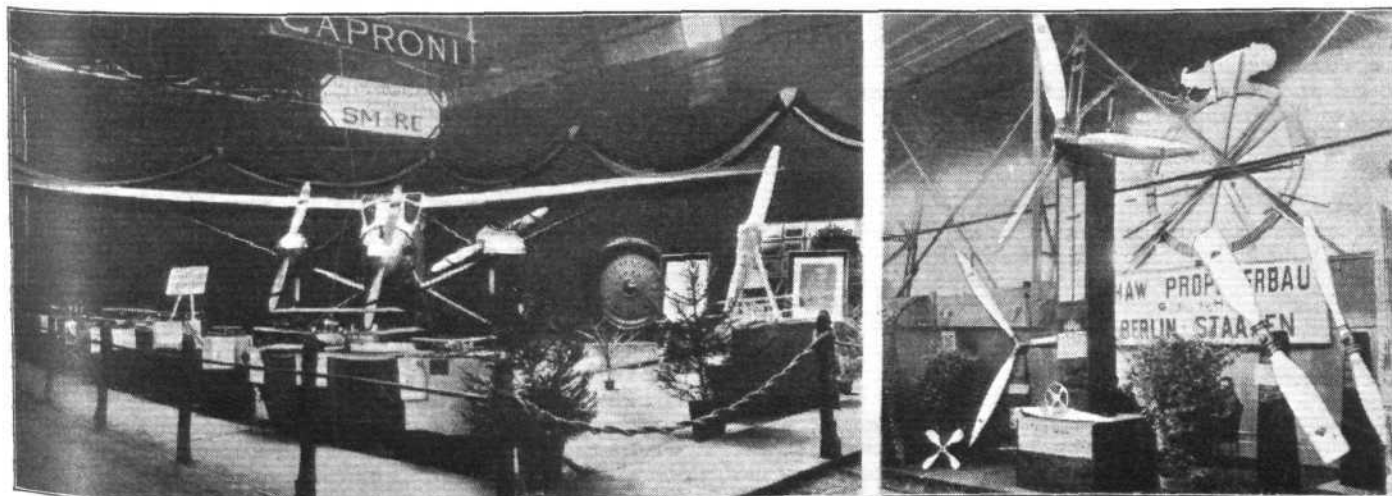
The wings, which have spruce spars and duralumin ribs,

are made to fold back along the fuselage, whilst the ailerons extend along the full span of the wings. The fuselage is of welded steel tube construction, and the power plant—an 85-h.p. Walter (or similar type) air-cooled radial—is mounted in a quick detachable tubular steel mount. The under-carriage is of the divided type.

The Fiat exhibit, in addition to the Fiat engines, consisted of the "A.120" parasol reconnaissance monoplane in skeleton, and the "A.S.1" light 'plane. This latter machine, like the Breda 15, is a two-seater cabin monoplane but of slightly smaller dimensions. The "cabin," however, is formed by enclosing the cabane supporting the wings above the fuselage, so that the "A.S.1" may be described as a "coupé." A description of this machine appears elsewhere in this issue, so we need not dwell upon it further here.

Perhaps the most interesting of the aircraft exhibits was that of the Caproni company, which showed its latest type of aeroplane—an eight-seater, three-engined monoplane, ordered by the Italian Airlines for use over the Rome-Milan-Monaco route, which is, we understand, a rather difficult one. The "Ca.97" is a high-wing braced monoplane with a cabin fuselage, equipped with three 120 h.p. air-cooled radial engines, such as the Lorraine Dietrich. It is mainly constructed of steel, and the cabin is suitably furnished so as to provide the maximum possible comfort for the passengers. An important feature of the "Ca.97" is that, instead of the three engines, it can be fitted with a single engine, installed in the nose of the fuselage, of some 400 h.p. (such as the Bristol "Jupiter"), or with two wing engines of about 200 h.p. Incidentally, this is the first Italian-built machine to be put into service on the Italian air lines, which, up to now, have been operated with Dorniers, Fokkers and Vickers.

Some interesting models of other Caproni types were also shown, one of the giant 6,000-h.p. biplane, which will



AT MILAN : On the left the Caproni stand, showing the Ca.97 three-engined commercial monoplane, and on the right the exhibit of Haw Propeller Bau, of Berlin.

have a span of 164 ft. and will be powered with six Isotta-Fraschini 1,000-h.p. "Asso" engines, arranged in tandem units. The gap between the wings will be 23 ft. and the overall height about 33 ft. Another model was of the "Ca. 100 T. 2"—the Italian version of the De Havilland "Moth." This machine is similar in some respects to its prototype, but differs mainly in having the typical Caproni short-span top-plane arrangement. It is fitted with a D.H. "Gipsy" engine.

Space will not permit of a description of other exhibits at Milan, but mention may be made of the "Haw" metal propellers shown by the Berlin firm of that name; the interesting range of "Pirelli" aero wheels and tyres; and the French 450-h.p. Hispano-Suiza engine.

Finally, it may be added the aircraft section of the Show was honoured by a special visit from H.M. the King of Italy, who expressed sincere admiration regarding several of the Italian exhibits.

SIMMONDS "SPARTAN" AND BLACKBURN "BLUEBIRD" SELECTED FOR NATIONAL FLYING SERVICES SCHEME

NATIONAL FLYING SERVICES, LTD. are not letting the grass grow under their feet. The latest developments to hand from them states that the Simmonds "Spartan" and the Blackburn "Bluebird IV" light aeroplanes have been adopted by them to form the nucleus of their fleet of training and touring machines, which will be stationed at their flying centres. Both types will be fitted with the "Cirrus III" air-cooled engine. Thus is settled a question which has been the subject of speculation in the aircraft industry. The orders involved, state N.F.S. Ltd., are the largest yet placed for light aeroplanes for civil use in this country, and they carry with them prospects of considerable future business.

Orders are being placed immediately for the major part of the flying stock required for the equipment of the London Air Park at Hanworth, and the ten provincial air parks which are included in the first part of the company's scheme. A total of 54 aircraft of mixed types will be provided in due course as the full complement. Two flights, one of "Spartans" and the other of "Bluebirds," will be stationed at the London Air Park, besides taxi-machines and a reserve pool.

The choice of the "Spartan" and "Bluebird" was not founded on any general superiority which these machines were held to possess over their rivals, but on their particular suitability for the company's work—the "Spartan" for its excellent qualities as a training machine, robust construction and the special advantage of interchangeability of its components and parts, the "Bluebird" for its attractive side-by-side seating for pilot and passenger, and its advanced system of metal construction, of a simplicity resembling a meccano toy.

Chief Pilot Appointed

Capt. T. Neville Stack, A.F.C., has been appointed Chief Pilot to the company and will be in charge of all flying operations. In company with Capt. Leete he made the first light aeroplane flight to India in 1926. During the past few years he has been prominent in British aviation as Chief Pilot to A.D.C. Aircraft, Ltd., at Croydon Aerodrome.

Capt. the Hon. J. B. Rodney, M.C., has been appointed Senior Pilot at the London Air Park and in charge of the Hanworth Park Country Club. Capt. Rodney is a pilot of long experience.

A total complement of 34 pilots will be required in the course of developing the London and provincial air parks now planned.

N.F.S. and South Africa

As the outcome of a visit to South Africa by Mr. G. E. F. Boyes, Deputy Managing Director, National Flying Services, Ltd. state that they have been appointed British representatives and consultants and sole agents to Union Airways, Ltd., of South Africa.

This company has concluded a satisfactory contract with the Union Government for the payment of a Government subsidy for the transport of mails by air between Cape Town, Port Elizabeth, Bloemfontein and Johannesburg, and also between Port Elizabeth, East London and Durban.

Major A. M. Miller, M.L.A., who was instrumental in forming Union Airways, Ltd., anticipates that in the very near future the company will establish air taxi centres and flying clubs in South Africa on the same lines as National Flying Services in this country, and arrangements have been made between the two companies to work in close co-operation with one another in their common interests.

For proposed mail services, Union Airways, Ltd., are considering the use at the outset of light aircraft specially modified for mail carrying and long-distance flying, but they expect that in the near future regular passenger services will be established with larger types of machines.

Tentative arrangements have also been entered into by National Flying Services, Ltd., to act as agents and representatives of a number of other companies which have been formed or are forming in different parts of the Empire.

A feature of their flying club scheme will be the opportunity offered to trained members of their clubs to hire machines at reasonable rates for personal use. In the past it has been one of the drawbacks of club flying that after a member has qualified as a pilot little or no encouragement has been given to him to hire one of the club machines and take it away from the home aerodrome for pleasure or business journeys. The demands of other members for tuition have naturally taken precedence, whilst in some clubs the hire of machines for use beyond the confines of the aerodrome has been forbidden under the club rules.

Members of the N.F.S. clubs, however, once they are competent to undertake cross-country flying, will have the right to hire a machine and take it away at any time, and the flying rates have been arranged on a descending scale in order to give the maximum inducement to members to indulge in flying as often as they desire. "The general principle," states Colonel Edwards, "is that the more a member flies, the cheaper he is entitled to obtain his flying, and the less he should contribute per flying hour to the overhead costs of the organisation."

The standard hire charge for a "Spartan" or "Bluebird" will be 30s. per hour, which at 80 miles an hour is equivalent to 4½d. a mile. This will be an all-inclusive charge and cover fuel, insurance, and landing and housing fees at all N.F.S. flying stations. Members who buy a book of vouchers for 30 hours' flying will profit by a reduction in the rate to 27s. an hour, for 60 hours to 24s. per hour, and for 90 hours to 21s. per hour. This latter rate is equivalent to 3¼d. a mile. For a journey from London to Paris it represents an inclusive fare of £3 3s. for two people.

At St. James's Palace Levee

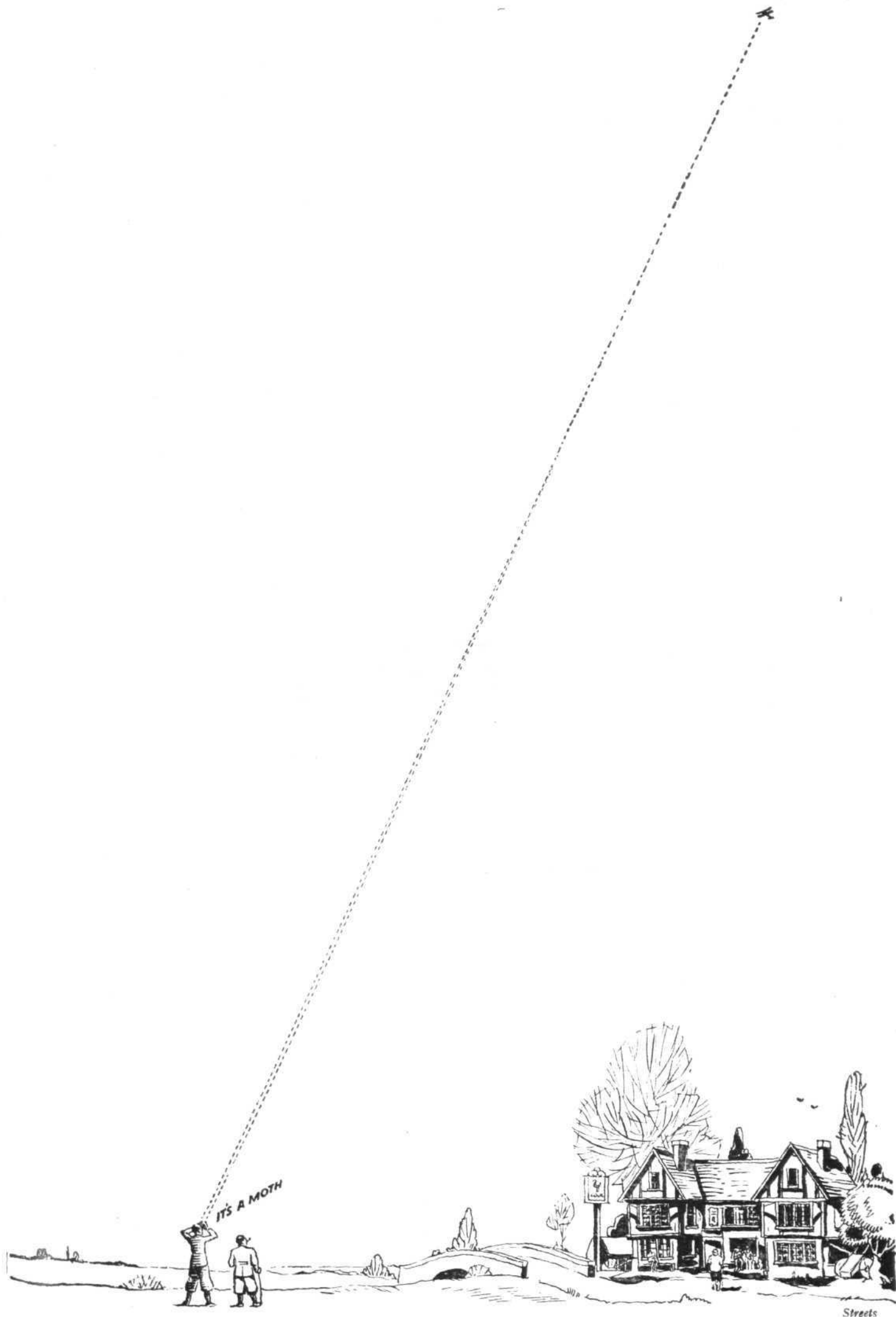
By command of the King, a Levee was held on May 7 at St. James's Palace by H.R.H. the Prince of Wales on behalf of His Majesty. Amongst those presented to His Royal Highness were:—Flight-Lieut. W. Allen, Flight-Lieut. H. Beardsworth, Flight-Lieut. B. Bennett, Flight-Lieut. H. Broughall, M.C., D.F.C., Col. C. Buckle, C.B.E., on appointment to Command 27th (Ldn.) Air Defence Brigade, Squad-Leader G. Cock, M.C., Flight-Lieut. J. Cottle, M.B.E., D.F.C., Squad-Leader A. Daly, Flight-Lieut. H. Down, A.F.C., Air Vice-Marshal Sir E. Ellington, K.C.B., C.M.G., C.B.E., on appointment as Air Officer Commanding-in-Chief, Air Defence of Gt. Britain. Group Capt. E. Gossage, D.S.O., M.C., Flight-Lieut. H. Lydford, A.F.C., Air Commodore N. MacEwen, C.M.G., D.S.O., Squad-Leader P. Maitland, A.F.C., Air Commodore A. Warrington-Morris, C.M.G., O.B.E.

Squad-Leader T. Newton, D.S.C., Flight-Lieut. F. Norton, Wing Commander R. Parry, D.S.O., Group Capt. M. Robertson, D.F.C., Flight-Lieut. R. Stedman, Flight-Lieut. S. Storrar, Flight-Lieut. G. Stringer, D.F.C., Squad-Leader H. Thorold, D.S.C., D.F.C., A.F.C. Those in attendance included Air Chief Marshal Sir J. Salmond, Principal Air Aide-de-Camp, Sir Samuel Hoare, Secretary of State for Air, Air Commodore C. Newall, Group-Capt. R. P. Ross etc.

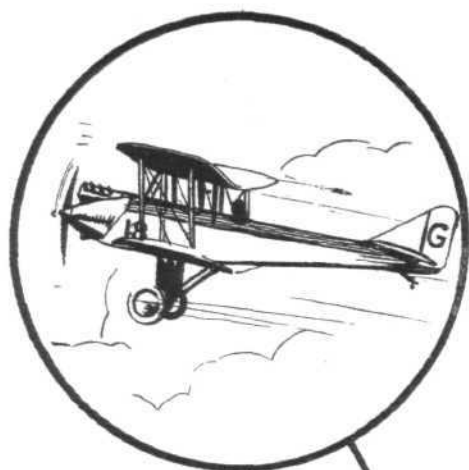
Canadian Air Mails

PLANS, it is reported, for a weekly air mail and passenger service between North America and Europe over the Greenland-Iceland route are being made by a Chicago company. The air mail service between Ottawa, Montreal and Rimouski, was resumed for the coming season on April 25 in connection with the arrival at the latter point of the Canadian Pacific liner, *Duchess of York*.

FLIGHT, MAY 16, 1929



Save time by using the Air Mail.



TITANINE

The World's Premier

DOPE

TITANINE - EMAILLITE LTD.

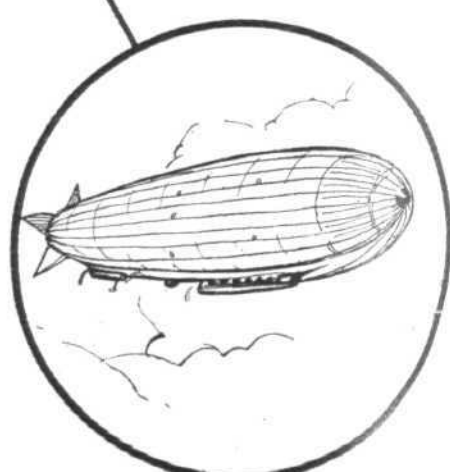
**HEAD OFFICE: Empire House, 175 Piccadilly,
LONDON W.1.**

WORKS:

Hendon (LONDON NW9)
New Jersey (U.S.A.)
Milan (ITALY)
Bremen (GERMANY)

TELEGRAMS & CABLES:

"Tetrafree" PICCY LONDON
Codes: ABC5 "EDITION
& BENTLEY'S



Kindly mention "Flight" when corresponding with advertisers.

A complete range of AIRCRAFT AND ENGINES

AS makers of the widest and most successful range of British aircraft and engines, the Armstrong Siddeley Development Co., Ltd., is in a unique position to offer the results of its extensive experience on matters relating to air transport, training, fighting or private flying machines on land or sea in any part of the world.

AIRCRAFT

includes the All-Steel Atlas fighter and reconnaissance machines, the All-Steel Siskin single seater fighter, the All-Steel A.W.14 high performance fighter and the Argosy Air-liner.

ENGINES

include the 700-750 h.p. Leopard, the 460-500 h.p. Geared Jaguar, the Supercharged Jaguar, the 230 h.p. Lynx (geared or supercharged), the 130-140 h.p. Mongoose and the 80-88 h.p. Genet.

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED
Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.1

ARMSTRONG SIDDELEY MOTORS LIMITED
Head Office and Works: Coventry. London: 10 Old Bond Street, W.1

AIRCRAFT & AERO ENGINE PR



Making Armstrong Whitworth Steel Wings

Over a thousand men are building steel aircraft at the Whitley Works of Sir W. G. Armstrong Whitworth Aircraft Limited.

Four other Aircraft Manufacturers are building similar aircraft under licence from Sir W. G. Armstrong Whitworth Aircraft Limited.

Armstrong Whitworth steel aeroplanes were the first steel aircraft to be used in quantity and manufactured in series.

They have been standardised as the single seater fighters of the Royal Air Force and have been in production for over six years.

Armstrong Whitworth spars have shown no deterioration in this period.

Steel is stronger, safer and surer in service than any other metal.

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED
Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.

DUCTION ON THE GRAND SCALE



Making Armstrong Siddeley Air-cooled Aero Engines

Armstrong Siddeley Motors Limited are pioneers of the high-powered air-cooled aero engine.

Their range of engines is the most complete and most universally satisfactory in service. It includes engines of 750, 460, 230, 130 and 80 h.p.

Armstrong Siddeley designs have been in the forefront of development for the last ten years.

Their many patented features such as cylinder head, cylinder locking ring, epicyclic gearing and supercharger have proved their value under the severest conditions.

For the greatest reliability and the most enduring economy at home or overseas, on land or sea, fit an Armstrong Siddeley air-cooled engine.

ARMSTRONG SIDDELEY MOTORS LIMITED

Head Office and Works: Coventry.

London: 10 Old Bond Street, W.1

The
ARMSTRONG SIDDELEY
RANGE OF RADIAL ENGINES
COVERS EVERY PHASE
OF FLYING

From the 700 h.p. "LEOPARD" to the 80 h.p. "GENET"

The 700-750 h.p. 14 cylinder Leopard for civilian use or for carrying troops or torpedoes.

- * **The 14 cylinder Jaguar** is the standard engine in the single-seater fighters of the R.A.F. It has been used for years by Imperial Airways Limited on their largest and most luxurious air liners. It has made some of the longest and most successful transcontinental flights.
- * **The 7 cylinder Lynx** is the most reliable engine of 215-225 h.p. in the world. It was used for the great Dutch flights from Amsterdam to Batavia.
- * **The 5 cylinder Mongoose** is the best medium weight engine for training, and as such has had ample opportunity of proving its powers.

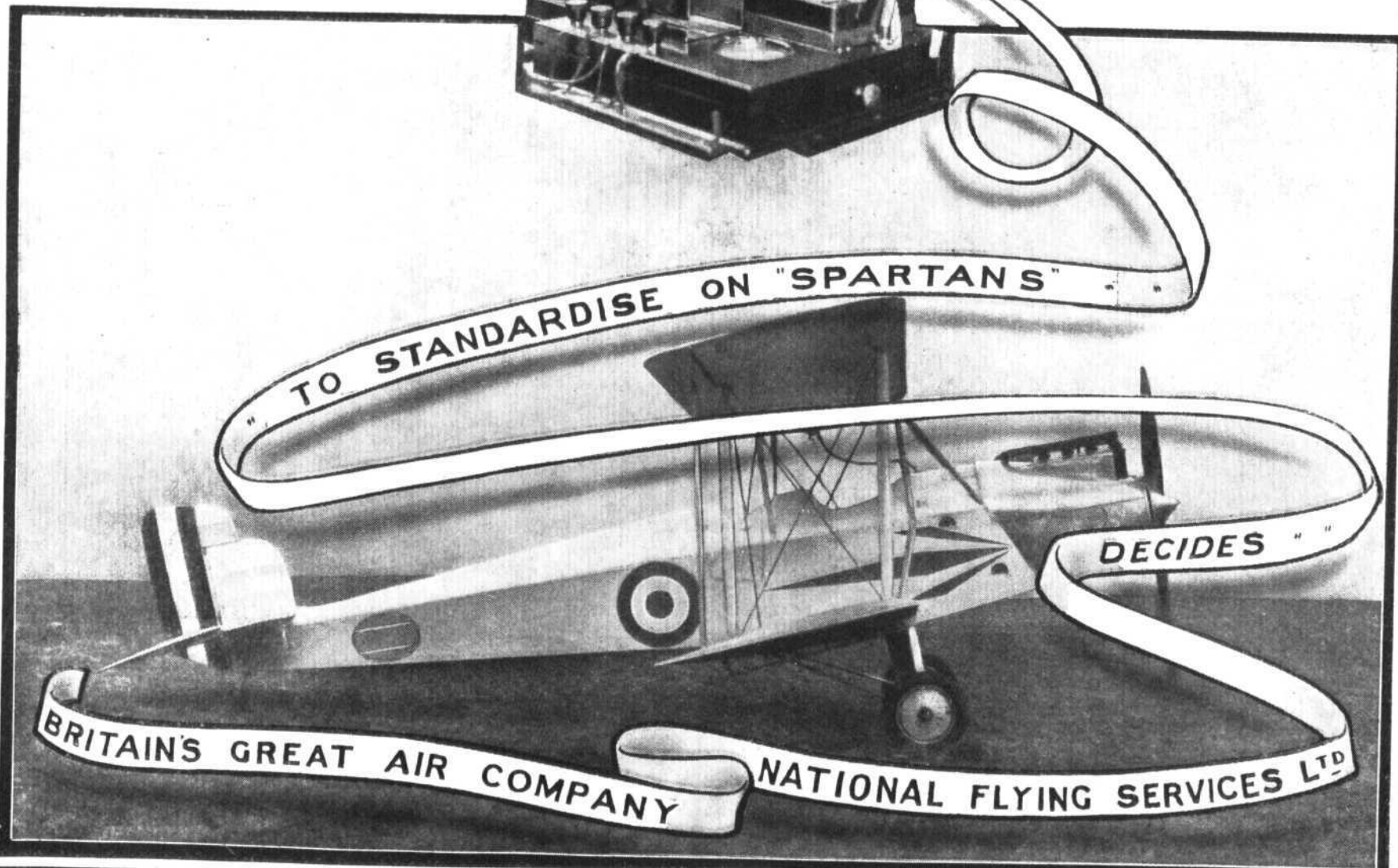
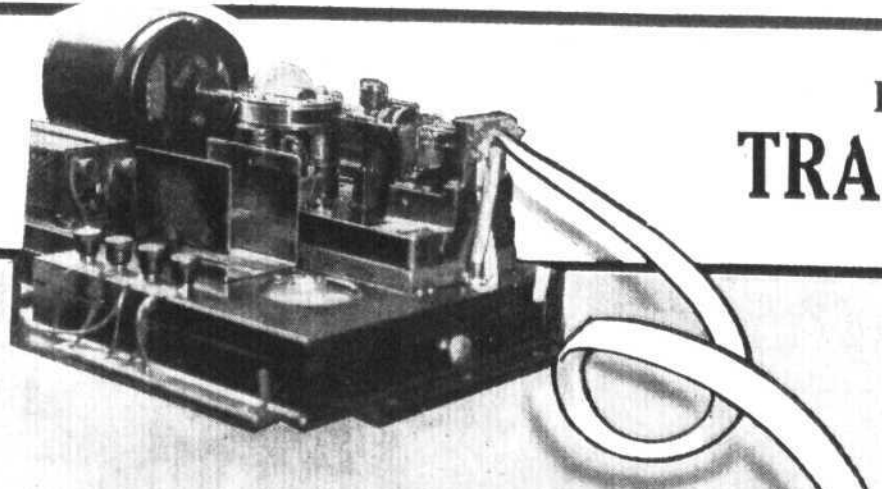
The 5 cylinder Genet is the lightest light aeroplane engine in its class. There is no more robust, economical and reliable light engine in the world.

* As the same cylinder is used on these engines many other parts are interchangeable, thus effecting a great saving in care and maintenance charges.

ARMSTRONG SIDDELEY MOTORS LIMITED.
COVENTRY

THE SPARTAN

FOR
TRAINING



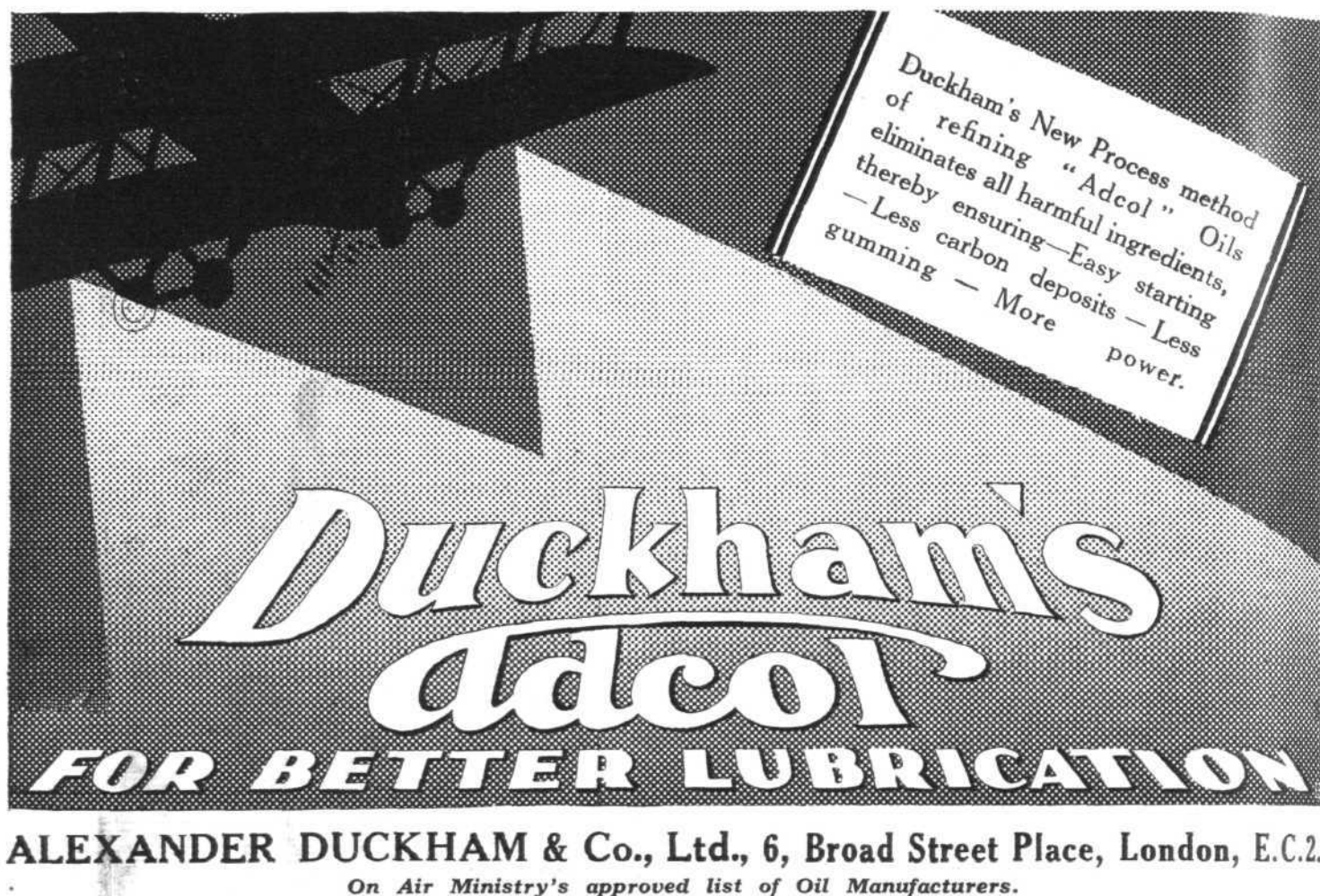
SIMMONDS AIRCRAFT LTD:



SOUTHAMPTON

Save time by using the Air Mail.
XVII

FLIGHT, MAY 16, 1929



Duckham's New Process method of refining "Adcol" Oils eliminates all harmful ingredients, thereby ensuring—Easy starting—Less carbon deposits—Less gumming—More power.

Duckham's Adcol

FOR BETTER LUBRICATION

ALEXANDER DUCKHAM & Co., Ltd., 6, Broad Street Place, London, E.C.2.
On Air Ministry's approved list of Oil Manufacturers.

8448

A LEVEL
1928

THE SIGN OF SAFETY.



· R · O · P ·

AVIATION SPIRIT.

RUSSIAN OIL PRODUCTS LTD.
MOORGATE HALL, LONDON, E.C.2.
PHONE: LONDON WALL 9204-5.

Kindly mention "Flight" when corresponding with advertisers.

HUGHES-WAAGE COURSE CORRECTOR

An Instrument of Interest
to Air Navigators

THE corrector has two discs, both with compass roses. The discs are connected by an arrangement which only permits a relative parallel movement. While thus arranged, the north-south line on both discs and any two corresponding lines will be parallel in any relative position of discs.

On the white celluloid disc radial lines are drawn every five degrees. The cardinal and quadrantal points are marked by their letters on both discs. On the transparent disc, only the north-south and east-west lines are fully drawn, in order to fix centre precisely.

On the white disc are drawn circles, the radius interval of which are one-tenth of the radius of the tenth circle.

The corrector is based on the well-known principle that the speed and direction of wind are found by two drift observations on two different courses.

The drift can be read on a simple instrument. The aircraft can also be fitted with a graduation on the tail plane for drift reading. To make clearer the use of the corrector the latter method will be dealt with.

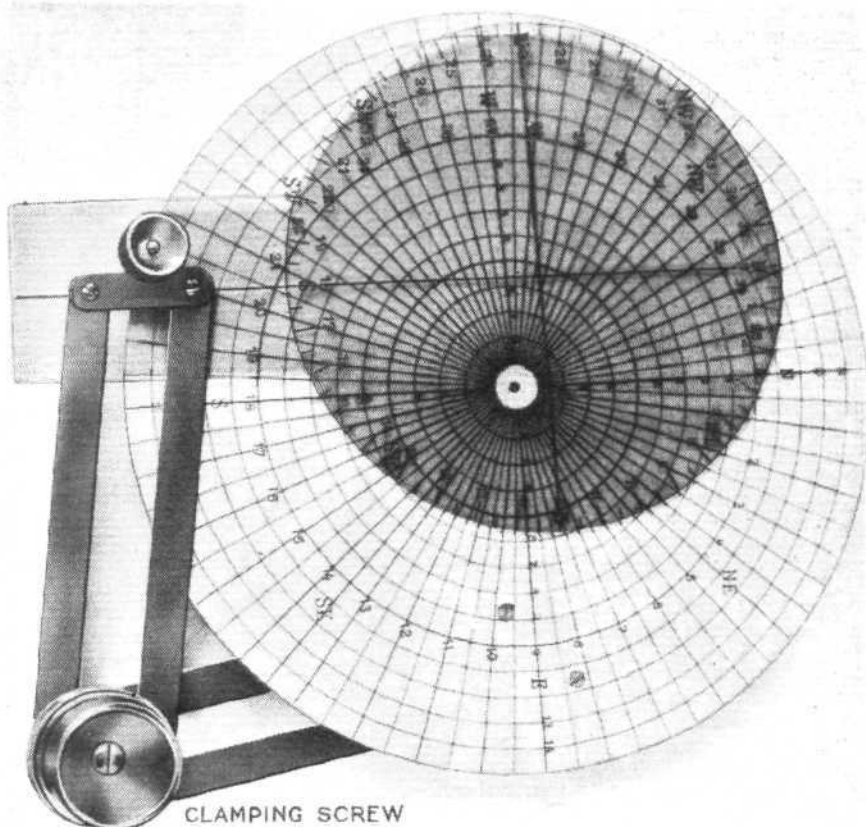
Fig. 1. The two diopters near the observer's seat are centres of the graduation on the tail plane. Every five degrees are marked with a streak, as shown on the figure. In order to read the drift, you should determine the point of the graduation where a line from dioptr cuts which is so that some point on earth will remain in it, when flying a steady compass course.

When following a line that cuts the graduation in a point to one or another side of the correct point, you will see that the point on earth in prolongation of the line is moving out of it.

The correct point on the graduation found, you can read the drift in number of degrees on the tail plane directly.

On the right side of the tail plane is painted a minus — sign, on left side a plus + sign.

Plus and minus are put on so because the drift measured on the right side of the tail plane has a clockwise direction



Hughes-Waage Course Corrector,

and the drift measured on the left side an anti-clockwise direction out of compass course.

Fig. 2 shows the geometric proof of the fact that speed and direction of wind can be found when the angles of drift on two different courses are known.

The length of the radius of circle is indifferent. North-south line is laid off through the centre. The radii OA and OB represent known compass courses, Oa and Ob respective courses made good laid off by the known angles of drift x and y.

The length of the radii OA and OB further represents the airspeed of the craft, which is the same on any course.

The problem then is to complete two triangles of velocities.

AH and BF must represent the wind in magnitude and direction and, therefore, they must be of equal length and parallel. The construction of AH and BF is done by the following method:—

From C lay off CD = AB. Through D lay off a line parallel to Oa. This line cuts Ob in F. Joining B and F the triangle of velocities OBF is completed.

To complete the other triangle AOH you only have to lay off from A a line parallel to BF. Then AH must be of the same length as BF.

Having determined speed and direction of wind, you can lay off several compass courses in the circle and complete the respective triangle of velocities. Fig. 3. You will then note that the point of intersection between lines representing wind and ground speed describe a circle with a radius equal to that of the first circle.

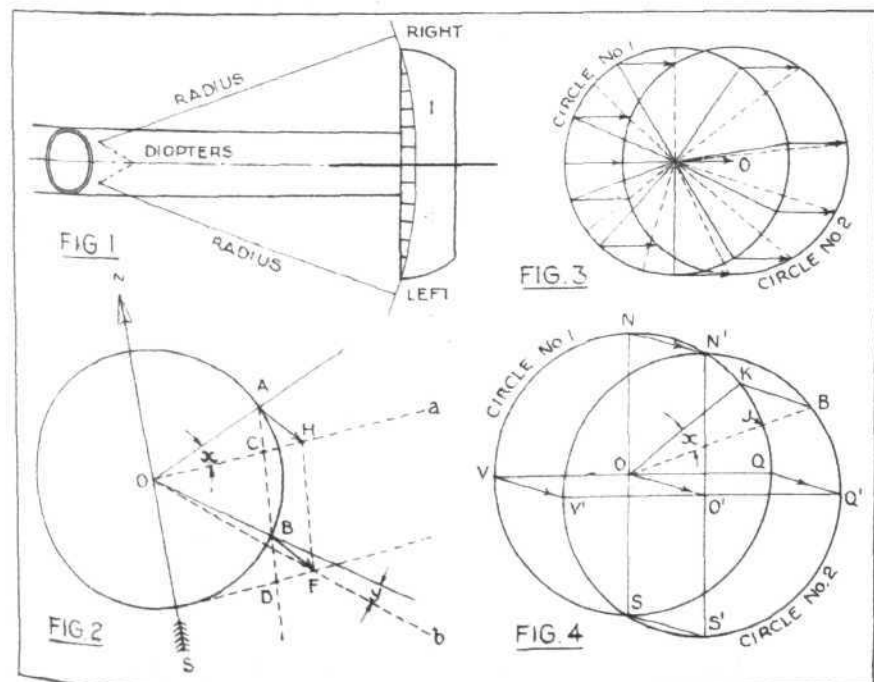
The circles are marked Nos. 1 and 2.

A line between the centres of the circles are equal to the line representing wind in magnitude and direction.

Fig. 4. The position of circle No. 2 represents a certain wind. It is shown that a compass graduation on circle No. 1 is quite simply transferred to circle No. 2 by drawing lines equal to 00' in magnitude and direction from each point on circle No. 1 to circle No. 2.

The circle No. 2 therefore is moved parallel away from circle No. 1 by action of wind.

On the figure is laid off a compass course OK, and thereafter the triangle of velocities OKB is completed. The point of graduation



K on circle No. 1 is just the same point as B on circle No. 2. To make good the track OF you have to steer the course OK, and this course is read on the graduations of circle No. 2 in B, where it is cut by the prolongation of OF.

How to Use the Course Corrector

A. Find the speed and direction of wind by the help of two drift observations on two different courses.

The aircraft is first flying compass course 030° , and the drift is found to be $+15^\circ$. The craft then changes its course to 080° , and the drift is found to be $+12^\circ$.

The relative displacement of circles corresponding to the speed and direction of wind is then to be found in the following way:—

The point of graduation 3 (030°) on the transparent disc is moved in *negative* (anti-clockwise) direction to the radius going through the point $030^\circ - 15^\circ = 015^\circ$ on the white disc. The next operation is to move the point 8 on the transparent disc to the radius through the point $080^\circ + 12^\circ = 092^\circ$ on the white disc in *positive* (clockwise) direction. This must be done by moving point 3 along the radius whereon it is placed, and until point 8 is on the radius through 92° on the white disc.

This done, you screw up the clamping screw. You can now get from the instrument the following data:—

(1) *The speed of wind*, represented by the distance between the centres. This is read directly on the white disc, where the circles divide the radii in tenths of the air speed of the craft, represented by the radius of the tenth circle.

(2) *The direction of wind*. You look for the radius going through the centre of the transparent disc. This centre is always moved away from the centre of the white disc in the direction of wind.

(3) *Course to steer to make good a certain track*. On the white disc, you note the track you want to make good. You follow the track till cutting the graduation of the transparent disc, and here you directly read course to steer.

(4) *Ground speed*. The ground speed is represented by the

line from the centre of the white disc to that point of graduation on the transparent disc which represents compass course (course to steer). The ground speed, as well as the wind, is measured in tenths of the air speed of the craft.

B.

You have seen above how to determine the wind by two drift observations. If you know the wind from a meteorological report, you have only to give the centres of discs a relative displacement corresponding to a certain air speed of the craft. The corrector is therefore very useful when you are preparing a flight and want to know the influence of wind in various heights and various directions.

Example: Wind, 210° 25 m.p.h., air speed 100 m.p.h. Find the course to steer to make good the track 120° . You can read directly that you must steer course 135° , and that your ground speed will be 96 m.p.h.

C. How to find speed and direction of wind when ground speed and air speed, track and compass course are known.

Ground speed	..	..	80 m.p.h.
Air speed	..	..	120 m.p.h.
Track	..	..	305°
Compass course	..	..	290°

The point 29 on the transparent disc is to be moved to the radius through point 305° , on the white disc, and thereafter along this radius till the distance from the centre of the white disc is $6\frac{2}{3}$ tenths (80 m.p.h.). You then screw up and read directly: wind, 265° , 40 m.p.h.

D.

All other problems in connection with the triangle of velocities can be solved by this instrument. You can, for example, use it to determine the radius of action of an aircraft.

If you can determine the direction of wind on sea surface (compass bearing), it is enough for determining speed of wind to take one single drift observation on one course.

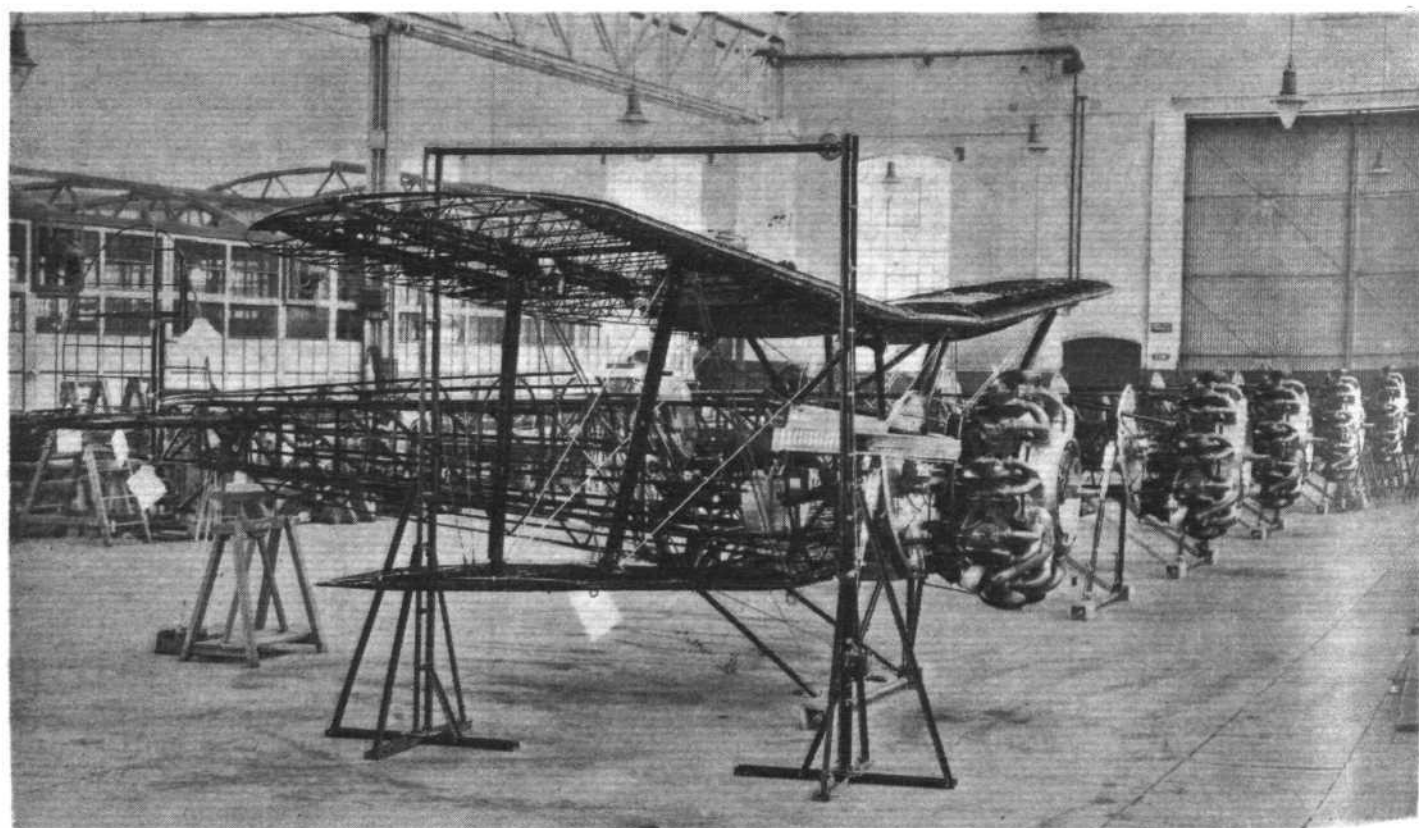
Further particulars of this instrument may be obtained from Henry Hughes & Son, Ltd., 59, Fenchurch Street, London, E.C.3.



Lubrication of Aircraft Engines

ON May 23, at 6.30 p.m., Mr. F. A. Foord will read his paper "Lubrication of Aircraft Engines," before the Royal Aeronautical Society. The paper will be read in the Lecture Hall of the Royal Society of Arts, 18, John Street, Adelphi,

W.C.2. Mr. Foord, who is the Senior Technical Officer in charge of air-cooled engine design, fuels and oils at the Air Ministry, will deal with the difficulties of finding the ideal lubricant and will discuss the main features of modern aircraft engine lubrication systems, oil cleaners and oil coolers. The lecture will be illustrated with slides.



METAL CONSTRUCTION: The above photo shows the erection of Bristol "Bulldog" all-steel single-seater Fighters at the Filton works of the Bristol Aeroplane Co., Ltd. An order for a number of these machines has just been obtained from Latvia.

**Safe
GROUND
WORK
on —**



DUNLOP RUBBER
CO. LIMITED,
FORT DUNLOP
BIRMINGHAM

Branches throughout
the World.

DUNLOP

Wired-Type Tyres on Dunlop Wheels
and Well-Base Rims.

C.F.H. 597

The de Havilland Aircraft Co., Ltd., manufacturers of
GIPSY-MOTH Aeroplanes



Use and Recommend

Wakefield **CASTROL** Motor Oil

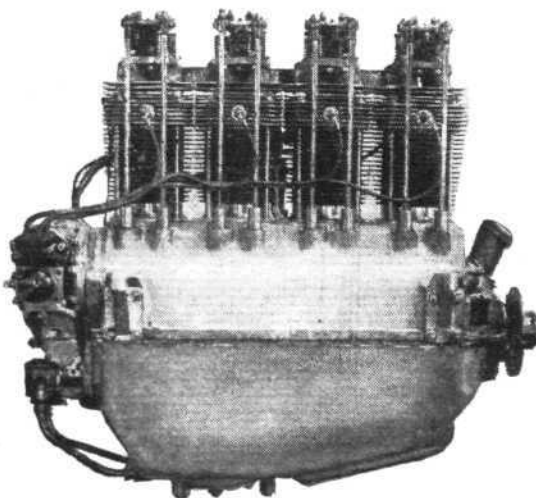
THE GIPSY ENGINE

Illustrated delivers 90 H.P.
at a normal speed of 1,900
R.P.M., and a maximum of
app. 100 H.P. at 2,100 R.P.M.
It weighs 285 lbs. complete
with air-screw boss; the pet-
rol consumption is 0.59 pints
per B.H.P. hour, and oil $\frac{1}{2}$ to
 $\frac{3}{4}$ pints per hour.

The GIPSY Engine is specially de-
signed and manufactured by the
de Havilland Aircraft Co., Ltd.,
for their MOTH Light Aeroplane,
which holds the unofficial Light
Plane Duration Record of over 24
hours, in addition to the following
World's Records.

Single Seater Light Planes.
Speed (100 Kms.) 186.47 m.p.h.

Two Seater Light Planes.
Height 19,980 ft.
Speed (100 Kms.) 119.84 m.p.h.



"As a result of exhaustive tests,
we have every confidence in
Wakefield CASTROL lubricat-
ing oil, and use CASTROL
'XXL' to lubricate the D.H.
GIPSY engines on test at our Works
in Summer, and CASTROL
'XL' in Winter. We recom-
mend the use of these lubricants
to all who use GIPSY Aero
Engines under normal condi-
tions, and the use of CASTROL
'R' for racing purposes."

Statement by
The de Havilland Aircraft
Co., Ltd.,
Edgware, Middlesex.

C. C. WAKEFIELD & CO., LTD., All-British Firm, Wakefield House, Cheapside, London, E.C.2

Save time by using the Air Mail.

FOR SAFETY'S SAKE

You cannot afford to use any but the finest quality rubber components. During the War, Luke Turner and Co., and Industrial Rubber Products Ltd., were pioneer manufacturers of aircraft rubber. Their very wide experience is at your disposal to-day.

**Petrol Resisting
Tube.
Shock Absorber
Cord.
Shock Absorber
Rings.**

**Rubber Buffers.
Moulded Rubber.
Water Hose.
Pitot Tubing
Steam Hose,
Etc., etc.**

Quotations gladly submitted
for every description of
AIRCRAFT RUBBER.

Our release notes authorised by A.I.D.
CONTRACTORS TO THE AIR MINISTRY.

INDUSTRIAL RUBBER MANUFACTURERS LTD
191-2 Tottenham Court Road,
London, W.C.

G.J.S.

*The Oldest and
Only Office
devoted entirely
to Aviation Risks*

**Claims paid to
date EXCEED
£ 3 5 0, 0 0 0**

BRITISH AVIATION INSURANCE GROUP

THE WHITE CROSS AVIATION INSURANCE
ASSOCIATION

Subscribed by Underwriters at Lloyd's.

UNION INSURANCE SOCIETY OF CANTON, Ltd.
Incorporated in Hong Kong. Established 1825.

Union Building, 78, 79, 80, Cornhill, London, E.C.3
Telephone Avenue 8662 (four lines).
Telegrams and Cables . . . "Unionist, London."

Underwriting Office, Lloyd's Building, 3-4, Lime St., E.C.3
Telephone Avenue 9288.
Telegrams and Cables . "Aviagroup, Stock, London."



Marine Aircraft

In 1912 Saunders were pioneers, building amphibians and flying boats of distinctive performance. In the years that followed, Saunders acquired a reputation for marine aircraft construction as unique as it was well-founded. To-day, out of the wealth of a century's experience, emerges an organisation new, modern, progressive, more than ever adapted to satisfy the demands for marine aircraft from the trade routes of the world

S. E. SAUNDERS LTD.

Constructors of all types of Aircraft,
EAST COWES, ISLE OF WIGHT.
BUSH HOUSE, LONDON, W.C.2.

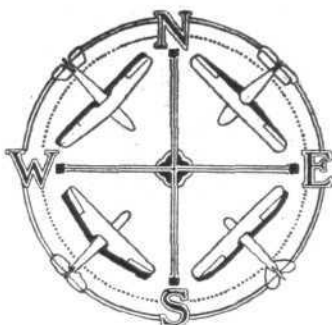
CONTRACTORS TO THE AIR
MINISTRY, ADMIRALTY, WAR
OFFICE, AND THE R.N.L.I.

SAUNDERS

Air Press Agency

Kindly mention "Flight" when corresponding with advertisers.

AIRISMS FROM THE



FOUR WINDS

Vickers "Vellore" at Muntok

STEADY progress has been made on the flight towards Australia from England by the Vicker's "Vellore" (Armstrong Siddeley "Jaguar") since it resumed from Cairo on May 1, piloted by Flight-Lieut. J. Moir and Flying Officer H. Owen. They were at Calcutta on May 8, and were delayed a day owing to the slight indisposition of Flying Officer Owen. Leaving on May 10, they flew in heavy rain for two hours at 150 ft., and arrived at Akyab. The next day the weather was still very bad when they flew to Rangoon and Bangkok. On May 13 Singapore was reached after a night had been spent at Singora, and they continued as far as Muntok that day.

Fairey Monoplane's Movements

THE Fairey long-range monoplane (Napier "Lion" engine) which flew non-stop from England to India, left Karachi on May 13 for Basra, piloted by Sqdn.-Ldr. A. G. Jones-Williams and Flight-Lieut. N. H. Jenkins. It will now fly to Hinaidi, where the engine will be taken down and overhauled. After that the monoplane will continue.

Indian Air Mail

THE Indian air mail, consisting of over 20,000 letters, which left Karachi on May 5, arrived at Croydon Aerodrome only 15 minutes late on May 12. Before Parliament rose the Postmaster-General was asked the number of letters received for transmission by the India Air Mail, and the reply was that the number was not recorded, but that the total weight of correspondence sent to India by air since the service began was about 1,800 lbs.

Graf Zeppelin for America?

THE *Observer* states that it is reported on Wall Street that negotiations are under way for the purchase of the *Graf Zeppelin* for use on an air passenger line between Los Angeles and Honolulu. According to messages from Cleveland, Mr. John Elden, President of Skyways, Inc., stated that details of the purchase of the dirigible would be drafted at a conference there on Sunday, and that Cleveland and Los Angeles capital would be united to buy the airship. Other reports state that the *Graf Zeppelin* has been granted permission by the Air Ministry to visit England and use the mooring mast at Cardington on its return flight from America this month. One of the passengers on this Atlantic trip will be Sir Hubert Wilkins.

Pacific Airship Service

THE promoters of an airship service across the Pacific Ocean have been promised full co-operation by President Hoover and action by Congress to give it a mail subsidy, states the *Daily Telegraph*. The subsidy seems assured, and will permit the inauguration of the new air line by 1932.

Seaplane Taxis for America

ONE of the most important commercial aviation projects set on foot in America was announced recently by the Curtiss Airports Corporation, a new company formed under powerful banking auspices. The company, which already possesses an interest in thirteen airports situated along the main lines of the big air transport companies, will operate a great fleet of seaplane taxis which will feed these ports, plying along the chief inland waterways of the United States, and so speeding up transit between all the great industrial centres.

The Aircraft Industry in Canada

OF great significance to the development of commercial aviation in eastern Canada is the announcement of the amalgamation of the Fairchild Aviation of Canada, Ltd., of Grand Mere, Quebec; International Airways of Canada, Ltd., with headquarters in Hamilton, Ontario; and the Canadian Airways, Ltd., of Toronto and Hamilton. Confirmation of the consolidation of these three companies was obtained from Mr. Elwood Wilson, President of the Fairchild Company, who states that each organisation will retain its own identity as an operating unit. Mr. Wilson also points out that the Fairchild Company will shortly construct a large aircraft factory in Canada for the manufacture of

Fairchild machines. The site of the factory has not been decided upon, but it will be in the Province of Quebec. It is also reported that the Curtiss Aircraft Company, of Camden, New Jersey, has purchased seven acres of land in St. Boniface, Mass., and will start construction immediately of an aircraft assembling and manufacturing plant. The building will be of permanent steel construction, one story in height for the present.

New Altitude Record Claimed

It is announced from Washington that Lieut. Apollo Soucek, U.S.N., claims to have created a new height record of 40,000 ft. on May 8. In the course of his flight he encountered a temperature of 60 deg. F. below zero.

Italian Schneider Team

CAPTS. GUZZETTI and GUASONE are reported to have been selected for the Italian Schneider Trophy team this year. The event takes place over the Solent on September 6 and 7.

French Aviation

M. LAURENT-EYNAC, the Minister for Air, has presented the draft constitution of a Council of Air Transport, which would co-ordinate the whole development and co-operation of commercial air lines. The Council would be assisted by technical and commercial committees. The project was approved.

Italian State Competition

THREE aircraft manufacturers, Breda, Fia and Macchi companies, have been declared winners in the Italian Government's State competition for the home production of the best small, low-cost aeroplane. The contest, which is part of a comprehensive scheme to make Italy a great "airfaring" nation, was organised with a special purpose. Several of the prize-winning machines are to be presented by the Government to young, qualifying pilots, who will form a civilian "house reserve" air force.

Signor Balbo, Under-Secretary for Air, was impressed at the tests, held near Rome, with the machine manufactured by the Breda Company of Milan. With an Isotta-Fraschini 85-h.p. engine, capable of 115 m.p.h., and carrying sufficient fuel for 500 miles, the machine holds two persons or 700 lb. useful load. The State encouragement of the manufacture of such small 'planes is largely inspired by the British developments in this direction. Other schemes to popularise flying in Italy are being organised. Public receptions, attended by Government officials, are frequently held at the Breda Airport, near Milan, when free air trips are offered to any who desire them.

Berne and Air Traffic

ON June 3 next, Berne will find itself connected with the many-branched system of international air traffic. The new air-port is situate at a distance of 3½ km. from the centre of the city, and may be rightly considered as occupying a position which as regards beauty is second to none in Europe. The geographical location of the Swiss Federal city has long made it famous as the natural gate of the beautiful Bernese Oberland, and this attraction will be still further enhanced by means of the new traffic possibilities, which will unite it more closely with its Hinterland, especially as it will be possible to reach the Bernese Alps by air in a little over half-an-hour, and to enjoy a flight over the Alps, from which an impression will be gained of transcendent beauty. Moreover, the Berne air port will prove of incalculable benefit not only to the citizens of Berne themselves, but also to the numerous visitors who flock to the picturesque old city each year, and who will be able in the future to fly straight from Berne to the great centres; Paris, London, Brussels, Amsterdam, Berlin, Munich, Vienna, Budapest, etc. Another advantage lies in the fact that all those who are interested in flying as a sport may become proficient pilots at the Bernese School for Flying. With the opening of the new International Tourist air-line Lake Lemman-Tyrol-Vienna, via Berne, lovers of nature and of the Alps will have delightful flights from Berne itself.

PRIVATE



FLYING

A Section of FLIGHT in the Interests of the Private Owner, Owner-Pilot, and Club Member

AMONGST THE LIGHT 'PLANE TOURISTS

Australia, Rhodesia, China, Middle East, and France

AS one group of illustrations with this article shows, General Sir Alexander Hore-Ruthven, V.C., Governor of South Australia, has a belief in the light 'plane for keeping his many distant engagements in South Australia. His A.D.C., Capt. the Hon. H. R. Grosvenor, owns a D.H. "Moth" (Cirrus), G-AUGS, in which he regularly flies the Governor of South Australia. Incidentally, Capt. Grosvenor has done very fine work in the Commonwealth in the cause of civil aviation, particularly in the interests of the light 'plane. His machine has already done over 250 hours' flying.

Last January, Capt. Grosvenor and a friend, Mr. Edward Tiarks, as passenger, put up a good performance in flying from Sydney to Adelaide in one day. Their total flying time was eleven hours, and the distance between the two cities, although officially recorded as 792 miles, appeared to have actually been nearer 840 miles. Capt. Grosvenor has flown twice between Adelaide and Sydney via Melbourne, and back via Hay and Mildura. Last February he flew the Governor of South Australia on an official tour of Kangaroo Island, which is about 100 miles from Adelaide. The flight there took 1½ hours. The only other transport available is a small boat, which takes eight hours for the passage.

Capt. Grosvenor has now started a solo tour of Australia in his machine.

Light Plane Tourists in the Desert

Our other illustrations with this story mark the progress of Mrs. H. Cleaver and her pilot, Capt. D. Drew (of Imperial Airways), on their tour in the Middle East, in her Gipsy-

Moth. They were at Rutbah Wells on April 4, and met Mr. Dudley Travers, senior pilot of Imperial Airways, Middle East Division, with the D.H. "Hercules," City of Jerusalem (Bristol "Jupiters"). Over a non-stop desert section of the air route, the Gipsy-Moth and the "Hercules" maintained the same speed.

Incidentally, Mr. Dudley Travers pays tribute to the reliability of the D.H. "Hercules" on the service. He piloted the first Indian Air Mail in both directions, and has flown 850 hrs. on "Hercules."

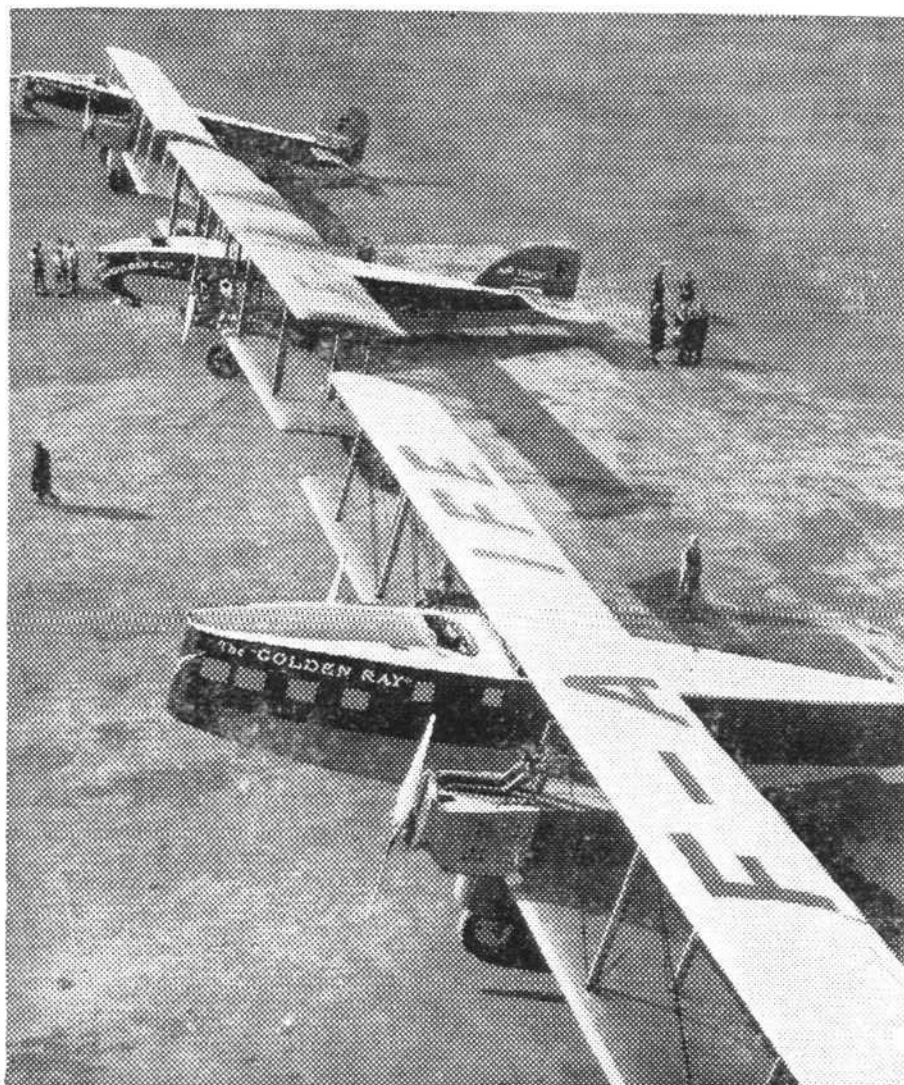
Propaganda in Rhodesia

Recent news comes of Squadron-Leader C. S. Wynne-Eyton, late R.A.F., and his flying activities in Rhodesia with his D.H. "Moth" (Cirrus) G-EBVJ, which he took out there about a year ago. During the past year his machine has been flying regularly through storms and under the tropical sun, but the necessary attention has only been confined to rigging adjustments, and changing tail skid shoes. His total running costs, excluding petrol and oil, have amounted to less than £2. His total flying time is 226 hrs. 15 mins. for the period.

Sqdn.-Leader Wynne-Eyton calculates that he has carried about 1,200 passengers, and made probably 1,500 landings, often on very rough aerodromes. His axle is still the original one. At present he is engaged on forming a flying club in Salisbury, which already has 50 members, of which eight are receiving instruction by him.



General Sir Alexander Hore-Ruthven, V.C., Governor of South Australia, uses the light 'plane to keep his many engagements. He is seen here in the front cockpit of the Cirrus-Moth belonging to his pilot and Aide-de-Camp, Capt. the Hon. H. R. Grosvenor, who is in the rear cockpit. This photograph was taken as they were about to start from Adelaide for a tour of Kangaroo Island, about 100 miles away. The other view shows the machine on the Island.



*The "Golden Ray"—the new fast
Air Union Service to Paris—*

Runs Exclusively on Prattis

*"Speed and Security
Depend upon Purity"*



THE BRITISH RUSSELL "LOBE" PARACHUTE



The "Russell-Lobe" Parachute and Adjustable Harness

Positive Action Packs
Automatic and Free Functioning
No Rubber or Elastic used to ensure opening
No Wire Spring Fittings
Highest quality silk used
Re-packing perfectly simple
Normal Speed of Descent
Absence of Shock on opening
Absence of swing during descent

Manufacturers: E. R. CALTHROP'S AERIAL PATENTS LTD.

All communications to

T. H. ROBERTS, Secretary and Treasurer.

THE BRITISH RUSSELL PARACHUTE CO., LTD.

Registered Offices:

423/423a, EDGWARE ROAD, LONDON, W.2.

Telegraphic & Cable Address:
"SAVEMALIVO, LONDON."

Telephone:
PADDINGTON 6332

STRIP STEEL

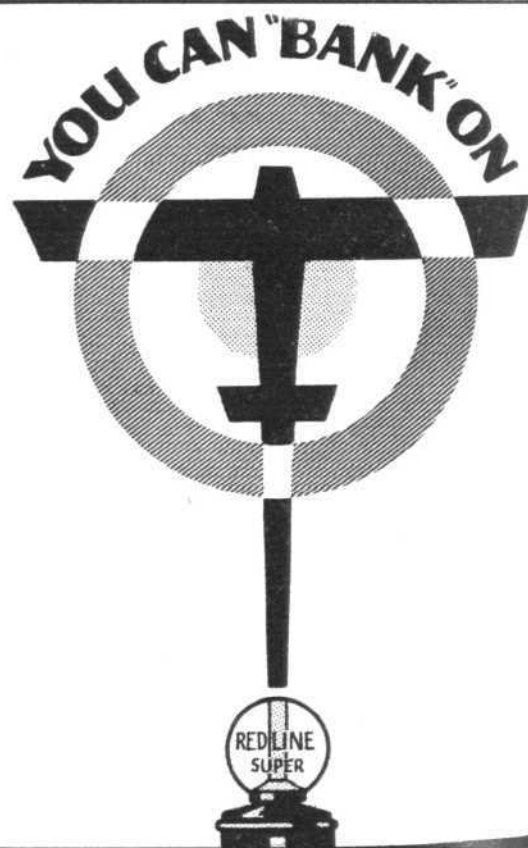
*Specialists in the Rolling
and Heat Treatment of
Aircraft Strip and Sheet
Steel.*

TO AIRBOARD SPECIFICATIONS.

*Deep Drawing Steel
for all kinds of Presswork.*

**J. J. HABERSHON & SONS, Ltd.,
HOLMES MILLS, ROTHERHAM.**

'Phone: ROTHERHAM 569 (4 lines). T. A.: "HABERSHON SONS,
ROTHERHAM."



REDLINE SUPER • PETROL

REDLINE MOTOR SPIRIT CO., LTD., 16, Charles St., Haymarket, S.W.

Kindly mention "Flight" when corresponding with advertisers.

The Cirrus-Avian Flight to China

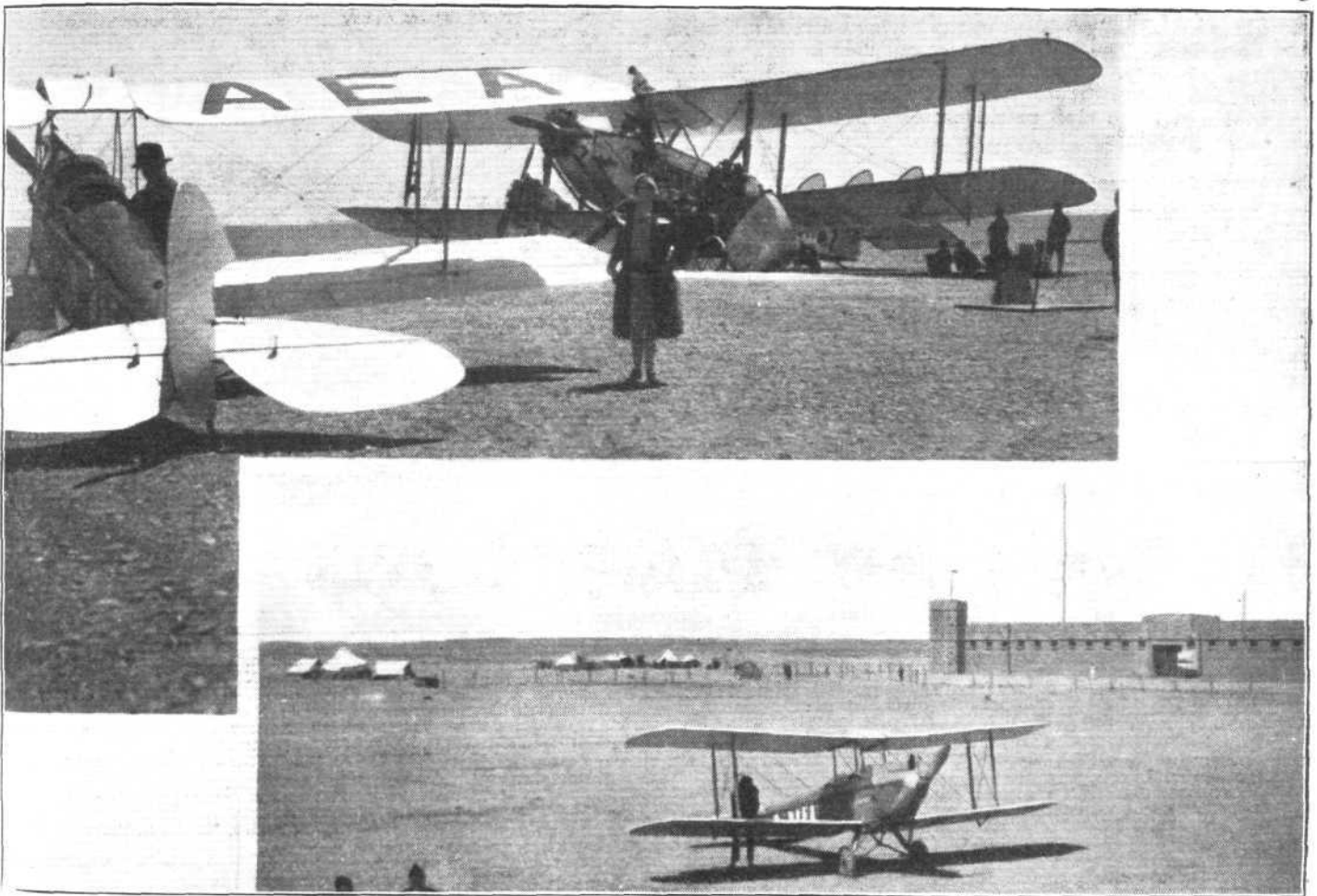
Apropos the flight to China from England, in a Cirrus-Avian, which we illustrated recently, the two pilots, Mr. Wen Lin Tschen and Mr. Christian Johannsen, were reported at Rangoon on May 3, Hanoi, Indo-China, May 8, and Amoy, China, May 12, which ended the flight. This flight proceeded very quietly and very smoothly. Its progress was not reported stage by stage, but when news did come through, it revealed that appreciable distances had been covered. The safe arrival in China is a considerable performance for the two pilots. It is possibly one of the longest flights carried out by a Chinese pilot. His machine is one of the Cirrus-Avians ordered by China, and is to be used for training Chinese pupils at a school to be opened in Nanking. About 9,200 miles have been covered.

Visiting French Chateaux by Air

Another light 'plane tour, but nearer home, has been made

by Lieut. L. G. Richardson, R.N., a private owner of considerable experience, whose previous tours have always been interesting reading in our Private Flying Columns. He had a week's leave at his disposal last month, so he toured the Chateau district of France, in his Cirrus-Moth, accompanied (as before) by his brother, Mr. E. W. A. Richardson.

He left Stag Lane on Monday afternoon, April 22, and flew to Paris, Tours, Poitiers, Angoulême and Arcachon, returning via Rochefort, Le Mans and Le Touquet. He stayed for a night at various places, visited many Chateaux by air, and landed in several fields on the Rivers Loire and Charente, in all cases on perfect natural aerodromes. He arrived back at Gosport the following Sunday evening, having successfully illustrated the utility of the light 'plane for a special purpose, within a limited time. In a future issue of FLIGHT we hope to publish a few air photographs taken in France by Lieut. Richardson.



These views mark the arrival of Mrs. Hylton Cleaver and Capt. Donald Drew in the former's Gipsy-Moth at Rutbah Wells on April 4 last, during their tour to India. Behind Mrs. Cleaver in the top picture is the Imperial Airways D.H. "Hercules" (Bristol "Jupiters") "City of Jerusalem" refuelling during the first east-bound Indian Air Mail flight.

CINQUE PORTS FLYING CLUB'S ANNUAL REPORT

THE club's first financial year ended on March 31 last, and it is interesting to note the results obtained during the first year's working. Although the club was deemed to start officially on April 1, 1928, yet regular flying did not begin until May 26, although a few hours had been flown on the two previous week-ends under voluntary instructors, so that the following figures really relate to only 10 months' working. 42 members flew in the club aircraft during the year, and the following members were trained "ab initio" by the club:—

Name.	Commenced Tuition.	Passed "A" Tests.
G. E. Story	May 12	July 1
R. Dallas Brett ..	"	"
A. V. C. Douglas ..	May 12	July 2
S. O. Crowther ..	July 27	August 3
W. R. J. A. R. West	June 6	August 19
G. Mackinnon ..	September 23	October 7
H. R. Law	October 25	November 10
H. C. Hamilton ..	November 28	December 9
S. A. Payn	November 26	December 14

E. T. Worsell	August 19	December 23
E. V. Somerset	October 3	December 27
W. G. H. R. B. Nicholson	March 6	March 9
P. M. Kabali	March 18	March 20
M. L. Braddell	May 13	March 20

Note.—Messrs. Nicholson and Kabali had had some previous experience.

In addition to the above, Mr. K. E. Wright, of Ashford, an ex-wartime pilot, took his refresher course and qualified for his "A" licence on club aircraft, making a total of 15 "A" licences in all. During this period, the club aircraft flew over 432 hrs., equivalent to a distance of about 30,000 miles. The club started in May with 22 flying members and 3 ground members, and at the end of the year, there were 62 flying members and 7 ground members. The new season has started successfully with 24 new members joining the club, of whom Mr. Cargill of Broughty Ferry, Mr. Bilham of Saltwood, Mr. Hume of Chatham, and Messrs. Richardson, Higgett and Whittingham of London, have already commenced instruction.

Toronto Club's "Goodwill" Flight

THE Toronto Flying Club informs us that for the first time in the history of Canadian civil aviation, a cross-country flight of twelve machines was made by the Club when they recently paid a return "Goodwill" visit to the pilots of the First Pursuit Group, U.S. Air Corps at Selfridge Field. The club flew en masse, in formations of threes, and on arrival at Selfridge Field, were met by Col. H. C. Danforth, Commandant, who introduced the Canadians to the personnel of his post. Each member of the Toronto Club was a guest of an officer of the Pursuit Group, and cars, homes and everything the army fliers owned, could beg or borrow, was at the disposal of the visitors. Last year the First Pursuit Group, flying Curtiss Hawks, visited Toronto for Aviation Day of the Canadian National Exhibition and during their stay were guests of the Toronto Flying Club. On the evening of the arrival of the Canadians at Selfridge, a dance was given in their honour at the Officers' Club. The next evening they were banquetted, Major Ralph Royce of the Group, introducing the aviators and aircraft manufacturers, and Capt. Earl Hand, D.F.C., president of the Flying Club, introducing the Canadians. The flight was accomplished in bad weather without incident. Instructors Carter Guest and Edward Burton led the flight of "Cirrus" and "Gypsy" D.H. "Moths" and the club president showed the way for the 30 cabin machines.

Whitsun Air Meetings

THE Northamptonshire Aero Club is holding an air pageant on Whit Monday and Tuesday, to which they invite private owners and club members. A landing competition will be held at 11.30 a.m. Monday. Other competitions will follow in the afternoon. Lunch will be provided on the aerodrome, and accommodation has been arranged at reduced rates for Sunday and Monday nights. The Norfolk and Norwich Aero Club is also holding a meeting on Whit Monday.

The Flying Prince

PRINCE LOUIS FERDINAND, second son of the former Crown Prince of Germany, residing at Los Angeles, is taking flying lessons.



Chief Instructor Carter Guest of the Toronto Flying Club greeted by Col. H. C. Danforth, Commandant, on arrival at Selfridge Field, Michigan, from Toronto. Below is the formation of Cirrus and Gypsy-Moths which he led on the "Goodwill" flight. His machine is called "Sir Charles Wakefield."

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware, Sec., H. E. Perrin, 3, Clifford Street, London, W.1.
Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Major G. S. Cooper, The Aerodrome, Patchway, Glos.
Cinque Ports Flying Club, Lympne, Hythe. Hon. Secretary, R. Dallas Brett, 114, High Street, Hythe, Kent.
Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.
Lancashire Aero Club, Woodford, Lancs. Secretary, Mr. Atherton, Avro Aerodrome, Woodford.
Liverpool and District Aero Club, Hooton, Cheshire. Hon. Secretary, Capt. Ellis, Hooton Aerodrome.
Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-on-Tyne Aero Club, Cramlington, Northumberland. Secretary, John Bell, Cramlington Aerodrome, Northumberland.
Norfolk and Norwich Aero Club, Mousehold, Norwich. Secretary, G. McEwen, The Aerodrome, Mousehold, Norwich.
Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., 30, Park Row, Nottingham.
The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, George Baldwin, Moorpark Aerodrome, Renfrew.
Southern Aero Club, Shoreham, Sussex. Secretary, Miss N. B. Birkett, Shoreham Aerodrome, Sussex.
Suffolk Aeroplane Club, Ipswich. Secretary, Maj. P. L. Holmes, The Aerodrome, Hadleigh, Suffolk.
Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

(MAY 6-MAY 12).—Instructors: Flight-Lieut. H. G. Travers and Captain F. R. Matthews. Ground engineers: C. Humphreys and A. E. Mitchell. Aircraft: The following machines were in commission: G-AABL, G-EBZC, G-AAEN and G-AAEX. Total flying time for the week: 51 hrs. 5 mins. Dual instruction: 28 members received dual instruction, the time being 25 hrs. 20 mins. Solo flying: 21 members flew solo, the time being 25 hrs. 45 mins.

Whitsuntide Flying.—The Club will be open on Whit Monday, the 20th instant, and will be closed for two days the following week, viz., Monday and Tuesday, May 27 and 28.

Club-House.—Mr. J. C. V. K. Watson has presented a silver petrol lighter and ash tray to the Club.

New Members.—Amongst the latest elections to the Club are two well-known dirt track racers, who, after a few hours' dual, expressed the view that flying was "dead easy."

BRISTOL & WESSEX AEROPLANE CLUB, LTD.

(MAY 5-11).—Pilot instructor: E. W. B. Bartlett. Ground engineer: A. W. Webb. Machines in commission: (2), TV, YH. Flying time for the week: 27 hrs. 50 mins. Pupils instructed: (10), 12 hrs. 15 mins. Soloists instructed: (4), 4 hrs. 30 mins. Licensed pilots: (8), 8 hrs. 35 mins. Test flights: (9), 55 mins. Passengers carried: (12), 3 hrs. 40 mins.

Another landmark in the history of the Club was passed this week when, yesterday, we started our week-end lunches which were sampled by some dozen members, all of whom appear quite well this morning! It is whispered that our lady caterer might even produce at short notice a sardine or doubtful egg for anyone visiting us on week days. Mr. Butcher did his first solo this week. We have received good entries for the Desprez Challenge Cup, and have decided to accept further entries if made at once. Capt. Broad has promised to give us some exhibition flying on Sunday, June 2. Sir Alan Cobham is visiting Bristol with his Canberra machine on May 25 and 26. We hope that the Lord Mayor of Bristol and members of the City Corporation will be able to meet him on the afternoon of the 25th. Sir Alan will give

joy rides to the public on the above dates. Mr. W. H. Amory, Mr. F. D. Butcher, Mr. G. A. Honour, and Mr. C. S. Leach did their first flights this week.

CINQUE PORTS FLYING CLUB

(APR. 28-MAY 4).—Pilot instructor: Mr. K. K. Brown. Ground engineer: Mr. R. H. Wynne. Machine in commission: R.I. Total for week: 20 hrs. 35 mins. Dual instruction: Mr. Richardson, 3 hrs. 30 mins.; Mr. Weweg Smith, 30 mins.; Mr. Scott-Taggart, 30 mins.; Mr. Higgett, 1 hr.; Mr. Whittingham, 1 hr.; Mr. Faudell, 30 mins.; Mr. Watson, 30 mins.; Mr. Hume, 2 hrs.; Mr. Cargill, 2 hrs. 30 mins.; Mr. Ellis, 2 hrs. 30 mins.; Mr. Bilham, 2 hrs.; Mr. Lillingston, 1 hr. Total: 12 members, 17 hrs. 30 mins. Ex R.A.F. pilot solo: Mr. Smith Marriott, 1 hr. 30 mins. "A" pilot: Mr. Braddell, 30 mins. Tests, (6) 55 mins.

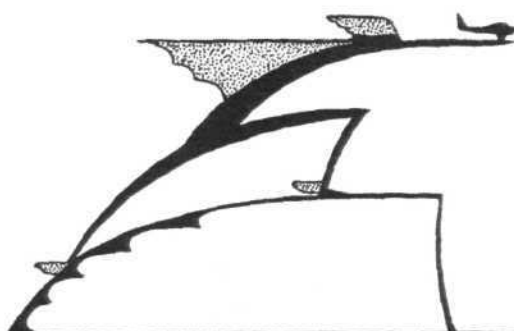
High winds stopped flying altogether on Monday and seriously interfered with instruction throughout the week, but in spite of this, there was a large demand for flying, and five more new members commenced instruction. They were Messrs. Scott-Taggart, Faudell and Watson of London, Mr. Ellis of Folkestone and Mr. Lillingston of the Small Arms School, Hythe.

One night during the week much excitement was occasioned by the testing of a new production by Messrs. Short Bros. The usual crowd of mechanics, etc., were gathered together with their properties, which included an outdoor fire extinguisher. As the machine took off, somebody knocked over the extinguisher, which proceeded to do its stuff with great enthusiasm. Various heroes attempted to grab it and turn off the tap, while the contents were scattered by the wind all over the assembled multitude, to the great joy of those members who were at a safe distance to windward. One recommends this scenario to any enterprising film producer who is short of custard pies.

HAMPSHIRE AEROPLANE CLUB

(MAY. 4-10).—Pilot instructors: Flight-Lieut. F. A. Swoffer, M.B.E., and Mr. W. H. Dudley. Ground engineers: Mr. E. Lenny and Mr. J. Elliott. Aircraft: D.H. 60 Moth G-EBOH and Spartan G-AAFR. Flying time for the week, 11 hrs. 5 mins. Pupils under instruction (9), 5 hrs. 20 mins.; soloists (2), 40 mins.; "A" pilots (5), 2 hrs. 25 mins.; passengers (1), 10 mins.; instructors, solo and tests (8), 2 hrs. 30 mins.

TELEPHONE HAYES 360



"the only piece of glass that remained unbroken was TripleX"



Fit

"TripleX" Regd.

-and be safe!

Make sure your car or aeroplane is fitted with TripleX Glass.

TRIPLEX SAFETY GLASS CO., LTD., 1, ALBEMARLE STREET, LONDON, W.1.

Mansfields Ltd.
AUTOMOBILE ENGINEERS & AGENTS.
17 CORNFIELD ROAD, EASTBOURNE.
TELEPHONE: 2000 EASTBOURNE
TELEGRAMS: "Mansfields 2000 Eastbourne"

SALES DEPT EIS/EM
APRIL 16th. 1929.

Messrs. TripleX Safety Glass Co. Ltd.,
1, Albemarle Street,
LONDON, W.1.

Dear Sirs,

We have just had an occasion to deal with the worst smash it has ever been our lot to witness, and we thought it would be of great interest to you and the General Public to know that the only piece of Glass that remained unbroken, was, TRIPLEX.

This was the lower half of the Windscreen and it was completely thrown from the Windscreen Frame into the car, and the only damage received was a crack. With the accompanying photographs you will see that all the remaining glass was ordinary PLATE GLASS and breaking of which unfortunately cut the Driver very severely.

This to our mind proves the outstanding features of your SAFETY GLASS, and we sincerely hope that the time will arrive when no Manufacturer will produce a car without the whole of the Glass being of the Safety Pattern.

We are,
Yours faithfully,
FOR MANSFIELDS LTD.
Sales Manager.



Save time by using the Air Mail.

ALL those who have the foresight and realise the vital part aviation must play in our "Empire's" future prosperity and progress, will appreciate the very great need to increase the air-mindedness and aviation knowledge of the general public. This can only be accomplished by some form, or forms, of advertisement.

UNDENIABLY, vast numbers of aerofoils flying overhead would be the finest form of publicity. This would be expensive, and although the number of planes is increasing, as yet there are millions of British citizens who do not see one from the beginning of the year to the end, and, consequently, are far from being air-minded. To overcome this lack of advertisement, a badge with an enigmatic but pleasantly conspicuous design has been evolved, which, if openly worn, is bound to arouse the curiosity of all perceiving. This object gained, in the course of time the viewer will naturally enquire the purpose of the badge; it will then be the pleasure of the wearer to expound the virtues of aviation and the exigency of the need for the public's full support.

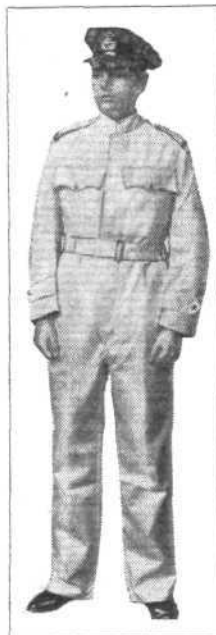
IT is not the habit of the average Britisher to draw attention to himself, and, consequently, there may be some inherent prejudice against wearing a badge. It is purely a matter of habit. All Ranks of the services wore or wear badges, and as this is not a matter of personal publicity, but one aiding a cause of very grave importance, although at first it will take a little moral courage, it is hoped, for the attention it will call, that this bias will be forgotten. As time proceeds, and the number of wearers increase, personal consciousness will be ended; it is then that the scheme will have its full effect.

AS the main idea is to show the average business man that there are very many, at least as intelligent as himself, who fly or otherwise support aviation, the Badges will only be sold to those of either sex whose personality, as far as it can be ascertained, will aid this object.

AS a further aid, if a sufficient number of Badges be sold, general aviation propaganda will be carried out in the public as well as technical press.

BADGES or BROOCHES may be obtained through any aviation firm, club or mess secretary, or direct from **AERO HIRE LTD., 39, Corporation Street, Birmingham, 2/-** post free, cash with order, or 2/6 C.O.D.

The "GIEVE" FLYING SUIT



as used

by

AUXILIARY SQUADRONS

Price **30/-**

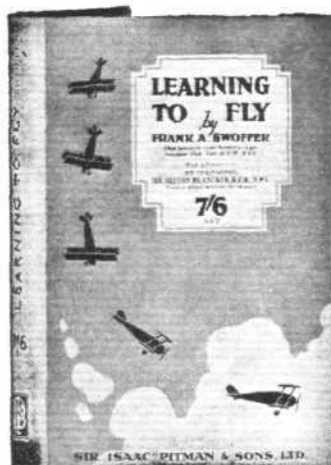
including
Badge of Rank.



GIEVES LTD.,

21, Old Bond Street, London, W.1.

Telegrams: "Muftis, London." Telephone: Gerrard 3318.



NOW READY.

LEARNING TO FLY

By

FRANK A. SWOFFER, M.B.E.

Chief Instructor to the Hampshire Aeroplane Club; Late Instructor at the Central Flying School, R.A.F., Upavon. With Foreword by Air Vice-Marshal Sir Sefton Brancker, K.C.B., A.F.C.

Designed to give pilots in training a better grasp of the practical course of flying instruction. The book is full of practical advice to all concerned with flying.

Crown 8vo., 156 pp. 7s. 6d. net. Illustrated.

Described by *THE MORNING POST* as "probably the most complete exposition of the methods of teaching generally practised."

PILOT'S "A" LICENCE: By JOHN F. LEEMING. Explains how to obtain a Flying Certificate, with other official information. Second Edition **3s. 6d.**

AEROBATICS: By Major OLIVER STEWART, M.C., A.F.C. A simple explanation of aerial evolutions. **5s. net.**

Order from a Bookseller or direct from

SIR ISAAC PITMAN & SONS, LTD.,
Parker Street, Kingsway, London, W.C.2.



COPPER, BRASS, PHOSPHOR BRONZE, TUBES, SHEETS, RODS and WIRE.
To AIR BOARD SPECIFICATIONS.

Specialities for Aircraft Work:—
DRAWN PHOSPHOR BRONZE TUBES AND RODS.

By Authority of The Air Ministry, Inspection Certificates are furnished with all our manufactures ordered to Air Board Specifications.

CHARLES CLIFFORD & SON, Ltd.,
BIRMINGHAM.

ESTABLISHED 1776.

"FLIGHT" PHOTOGRAPHS (Copyright).

BLACK AND WHITE, GLOSSY, UNMOUNTED:—

6½ × 4½ ... 1/6 8½ × 6½ ... 2/6 10 × 8 ... 3/6
12 × 10 ... 4/6 20 × 16 ... 10/6

DOUBLE THICKNESS, CREAM BASE, SEPIA TONED, UNMOUNTED:—

10 × 8 ... 6/- 12 × 10 ... 7/6 20 × 16 ... 21/-

HAND COLOURED, IN OILS (GREY MOUNT):—

20 × 15 (MOUNT 24 × 19) ... 31/6

FLIGHT Office,
36, Great Queen St., W.C.2.
Holborn 3211.

Kindly mention "Flight" when corresponding with advertisers.

Owing to the formidable combination of bad luck with aircraft and indifferent weather, our flying hours have been considerably reduced. The fund for a new aeroplane to replace OI, which has been sold, is gradually growing, but we still need another £200. Members are reminded that the Club will be open during Whitsun holidays, but will be closed on Monday and Tuesday, May 27 and 28.

LANCASHIRE AERO CLUB

(APR. 28-MAY 4).—Flying time: 41 hrs. 55 mins. Instruction: (28) 12 hrs. 55 mins. Solo flights: (23), 19 hrs. 30 mins. Passenger flights: (17), 6 hrs. 45 mins. Tests: (17), 2 hrs. 45 mins. Instruction (with Mr. Hall): Foote, Paddock, Barlow, Wilkinson, Miss Emery, Lister, Greg, Dane, Ashworth, W., Ashworth, J. H., Maxwell, Stern; (with Mr. Cantrill): Garner, Stern, Collins, Lister, Tweedale, Goss, Ashworth, W., Fallon, Foote, Gerrard, Greg, Ashworth, J. H., Wilkinson, Paddock, Miss Emery. Machines in commission: XD, MQ, EC, QL. Soloists (under instruction): Sellers, Goss, Stern, Barlow, Paddock, Williamson.

Pilots: Meads, Hall, R. F., Weale, Garner, Mills, Davies, R. G., Michelson, Harrison, Lacayo, Nelson, D., Gatrill, Fallon, Gerrard, Hardy, Whitehouse, Kay, Tweedale.

Passengers (with Mr. Hall, R. F.): Pemberton, Garner, Barlow, Ashworth, Freeman; (with Mr. Meads): Sellers, Miss Hill, Ashworth; (with Mr. Lacayo): Benson, Goss, Whitehouse; (with Mr. Michelson): Goss, Wolstenholme; (with Mr. Mills): Stern, Fallon, Gradwell; (with Mr. Hall): Harrison. Nearly 70 members of the club were in the air during the week.

Mr. Barlow accomplished an excellent first solo, but on his second solo flight he was unlucky enough to get a gust just as he was landing, which put XD on to her wing-tip and thence gracefully on to her back.

Messrs. Brown and Goodfellow returned to the fold at the week-end, having duly delivered GP to Madrid. According to their story they were held up in the neighbourhood of Barcelona for over two days by bad weather. As it was at Barcelona that Brown spent several years as instructor to the Spanish Royal Naval Air Service, this story was received with polite smiles. Nevertheless, it was true.

LIVERPOOL & DISTRICT AERO CLUB

(MAY. 5-11).—Machines in commission: W.K., X.Y., Z.M., Avro Avians. Instructor: Flight-Lieut. J. B. Allen. Ground staff: Messrs. H. Pixton and M. Mason. Total flying time: 44 hrs. 35 mins. Pupils: Dual (19), 17 hrs. 40 mins.; solo (5), 7 hrs. 10 mins.; "A" pilots (13), 13 hrs. 25 mins.; passenger flights (12), 5 hrs. 30 mins.; test flights (10), 50 mins.

Mr. Naylor, with Mr. Thornton as passenger, left on Saturday morning in the former's Moth, to attend the Aerial Rally at Gleneagles.

New pupils under instruction: Messrs. W. L. Wilson and L. S. Levitt. Capt. O. J. Marstrand and Mr. T. P. Gleave successfully completed their tests for aviators' certificates, and Mr. Andrews completed a satisfactory height test.

Visitors:—Mr. Hall (Avian), Lancashire Club, Mr. Zoccola (Moth), Mr. Law (Moth), Cinque Ports.

"J. B." who ought to know better, neatly removed a Polo edge board with his landing wheels. Possibly he is impatient to see Hooton a pukka Commercial Aerodrome, and so has started to "clear the deck."

The Second Landing Competition for the Leeming Trophy will take place on Saturday, June 1. Members of the Flying Sub-Committee are beginning to look worried already.

MIDLAND AERO CLUB

(MAY 5-11).—The total flying time was 28 hrs. 10 mins. Dual, 13 hrs. 25 mins.; solo, 9 hrs. 10 mins.; passenger, 4 hrs. 55 mins.; test, 40 mins. The following members were given dual instruction by Flight-Lieut. T. Rose, D.F.C., and Mr. W. H. Sutcliffe:—P. B. Hackett, T. G. Ellison, R. O. Wuxton, A. E. Colman, G. P. Haylock, H. E. Evans, Dr. W. G. Tilleke, F. A. Longman, H. A. Taylor, L. V. Mann, F. G. Robinson, K. S. Neale, L. W. Farrer, A. F. Hill, N. B. Thompson, H. Beamish. Advanced dual: H. J. Willis, S. G. Hall, W. M. Morris, R. C. Baxter.

"A" pilots:—R. L. Jackson, H. J. Willis, S. G. Hall, J. K. Norton, S. Duckitt, S. H. Smith, R. D. Bednell, J. Cobb, W. M. Morris, W. Swann, R. C. Baxter.

Soloists: P. B. Hackett, G. P. Haylock, A. E. Colman, H. E. Evans, L. V. Mann.

Passengers: W. H. Craven, G. Crellin, S. L. Huins, W. Breedon, R. Taylor, R. Ashford, A. Methley, W. Swann, H. T. Tester.

On Thursday, Mr. A. E. Colman passed the flying tests for his "A" licence.

NEWCASTLE-UPON-TYNE AERO CLUB

(APRIL 29-MAY 5).—Flying time: 27 hrs. 40 mins. Instruction: 14 hrs. 25 mins. "A" pilots: 8 hrs. 20 mins. Solo training: 30 mins. Passengers: 3 hrs. 20 mins. Tests: 1 hr. 5 mins.

Mr. Fairweather, of Glasgow, paid us a visit on his machine on Tuesday, April 30, while on Saturday, the Earl of Clydesdale's brother left on his Gipsy-Moth for his home at Strathavon.

(MAY 6-12).—Instructor: G. M. S. Kemp. Engineer: K. C. Brown. Assistant engineer: J. Tait. Aircraft: 3 (PT, LX, QV).

Flying time: 36 hrs. 35 mins. Instruction: 19 hrs. 10 mins. "A" pilots: 8 hrs. 5 mins. Solo training: 3 hrs. 30 mins. Passengers: 5 hrs. 35 mins. Tests: 15 mins.

Mr. T. A. Rogers and Mr. R. D. King were launched on their first solo flight this week, and they made a very successful attempt. Capt. Dismore, of Imperial Airways, paid us a visit last week on his way to Glasgow with a cargo of "Baron" cigarettes in his Avro Avian. Mr. Story, of the Cinque Ports Club, collected his Moth on Saturday, which was damaged when he landed at the aerodrome a while ago. Quite a number of flyers landed on Saturday at the aerodrome, among whom were Lady Bailey, Capt. Bailey, A. S. Butler, Mr. Ambler and Miss Winifred Browne. All these aviators flew Moths, with the exception of Miss Browne who had an Avian. They called on the way to Gleneagles where there was a friendly meeting being held.

THE NORTHAMPTONSHIRE AERO CLUB

(APR. 28-MAY 4).—Instructor: James Bunning. Ground engineer: J. Gallagher. Machine: 1 (RX).

RX out of commission one day, during which the engine was changed. Total flying time for week: 13 hrs. 50 mins. Highest total flying time for week is held by Mr. S. P. Tyzac: 4 hrs. 20 mins.

NOTTINGHAM AERO CLUB

(APR. 27-MAY 3).—Pilot instructor: Flight-Lieut. F. Lee-Bateman. Ground engineer: F. H. Harley (A.B.C.D.). Machines: G-EBQW and G-EBPU. Flying time: 26 hrs. 35 mins. Number of pupils under instruction and hours flown dual: (5) 8 hrs. 30 mins. Advanced dual: 20 mins. "A" pilots: 12 hrs. 10 mins. Names of pilots: Ball, Bradley, Kay, Shipside, Selvey, Taylor, Whitby. Number of passengers carried: 12.

We welcome to the club our new instructor, Flight-Lieut. Lee-Bateman, who has only recently left the service.

We compliment Mr. Cliff on passing his "A" licence tests with only 8 hrs. dual, which is the minimum time allowed in our club.

Last week one of our members, Mr. Cyril Ball, took up both the Lord Mayor Alderman Atkey, and also the Sheriff Alderman Green, both of whom enjoyed their flights.

We hope to see a larger and more regular attendance of members at the aerodrome now that we are having better weather and the daylight up to 9 o'clock in the evenings.

SCOTTISH FLYING CLUB, LTD.

(APR. 21-MAY 4).—Chief instructor: R. M. Stirling, A.F.C. Ground engineer: W. A. Calder. Machines in commission during period: X Moths G-EBYG, G-EBUX and G-EBWI. Total flying time: 44 hrs. 20 mins. Dual instruction: 22 hrs. 10 mins. Solo flying: 5 hrs. 25 mins. Passenger flying: 8 hrs. 55 mins. Joyrides: 5 hrs. 10 mins. Tests: 2 hrs. 40 mins.

Instruction (with Mr. Stirling): Messrs. D. A. Graham, J. E. R. Young, A. McIlwaine, A. McDonald, A. Cairns Smith, N. Hitchins, R. D. Campbell, K. Templeton, J. D. Sinclair, G. C. Forsyth, J. E. Fairley, J. C. McDougall, A. B. Fairley, R. R. Allan, A. B. Walter and Miss E. A. Anderson; (With Mr. Yuill): Messrs. D. A. Graham and A. McIlwain and Miss Anderson.

While not exceptionally high, our flying time during the past two weeks has been fairly satisfactorily maintained, and steady progress has been made in instructional work. Quite a number of *ab initio* pupils are approaching the solo stage and we look forward to a goodly return of "A" licences in the near future.

In order to stimulate interest in the movement generally, and to increase our membership, G-EBUX was exhibited at the Ayrshire Agricultural Show on Tuesday and Wednesday, April 30 and May 1, where it attracted considerable attention.

On Tuesday, April 30, another chapter was added to our now ponderous tome of mishaps, when G-EBWI, while being taken off on a passenger flight by Mr. W. M. Carlaw, D.F.C., crashed through the fence bordering Newmains Road and sustained rather considerable damage.

In conformity with the usual practice adopted by other clubs, it has been decided to close down the club on Monday of each week, commencing Monday, May 13, as a general staff holiday.

SCOTTISH AIR RALLY

A SUCCESSFUL air rally was held at Gleneagles, Perthshire, on Saturday, May 11, writes a Scottish correspondent, when many well-known pilots flew from different parts of England and Scotland. This was the first rally held in Scotland, and was organised by Miss Sicele O'Brien. An improvised aerodrome was staged on an admirable piece of ground a few minutes' walk from Gleneagles Hotel, and all agreed it formed an excellent landing place. The winner of the first part of the competition for arrivals, which had been previously arranged, was Mr. A. C. M. Jackaman, who, in his slotted-winged Coupé Gipsy-Moth, flew up from Slough, making a non-stop flight and crossing the landing line at exactly 3 p.m. He took 4 hrs. 10 mins. and covered over 350 miles. Mr. G. H. Ambler, also piloting a Gipsy-Moth, was the winner of the second part of the competition, arriving at 5 p.m. after flying from Sherburn, Yorks. Twenty machines originally entered, but not more than a dozen were expected. Of these, nine arrived before 6 p.m. They were: Mr. Fyfe Burns from Renfrew, Lady Bailey, Miss Winifred L. Brown, Mr. A. S. Butler, Chairman of De Havilland Aircraft Co., Ltd., Mr. F. A. I. Muntz, of Heston Aerodrome, Capt. W. R. Bailey, Mr. T. H. Naylor (Liverpool Flying Club), as well as Mr. Jackaman, of Slough, and Mr. G. H. Ambler from Sherburn, mentioned above.

In the earlier part of the afternoon Capt. R. M. Stirling, Chief Pilot Instructor to the Scottish Flying Club, Renfrew, arrived in the Club "Moth" and gave the crowd a good display of aerobatics. So far, flying has attracted limited attention in Scotland, but a move has been started to create a spirit of air enthusiasm into the minds of the public. The rally attracted a large gathering to Gleneagles, and by 3 p.m. a crowd of over 2,000 had assembled to watch the incoming 'planes.

All the machines were of the two-seater light 'plane type, and there were no less than nine De Havilland "Moths" present. The apparent ease with which these small machines were handled, considering the high gale which blew throughout the afternoon, made a great impression on all those present, and the events passed off without a hitch.

An aviation ball was held in the Gleneagles Hotel later in the evening, and among the numerous guests were Walter Hagen and other members of the American Ryder Cup team.

It is expected that as a result of the rally a suitable aerodrome will be erected near the hotel, and every inducement made to encourage owner pilots in England and other places to come to Scotland and alight at one of its most picturesque spots.

W. H.

EDDIES

LIEUT.-COL. I. A. E. EDWARDS, of National Flying Services, Ltd., is invariably interesting upon any subject he lays himself out to master, and so he proved himself once again the other day while he held the attention of the Institute of Transport, the while he discussed humorously yet seriously, upon the Internal Air Services and Overseas Connections. Naturally his leaning had a relationship to National Flying Services, Ltd. Amongst a few of the titbits during his paper, Colonel Edwards gave utterance to the following points. Aviation in this country was at present being asked to develop under impossible conditions. Outside London, there was barely one town which had adequate and convenient facilities for flying. We were spending money at the rate of from 50 to 60 millions a year on new roads. Many millions were spent each year by the railways on improvements and extensions to their tracks. But up to the present practically nothing had been spent on aerodromes.

IN America, where there were now roughly 800 equipped civil aerodromes, a strong movement was being organised to secure the construction of an aerodrome or landing ground in every ten-mile square throughout the country. Contrary to all expectations, calculations showed that the total area of land thus occupied would be but a fraction of the space occupied by railways and roads.

RAILWAYS and highways in England occupied roughly 1,820 square miles. First class aerodromes spaced at intervals of every ten miles would occupy 102 square miles. Therefore, if a national system of ground organisation for flying was provided on this scale, which would place an aerodrome within five miles of practically every office, shop or house in this country, the amount of ground allotted to airways would be only $5\frac{1}{2}$ per cent. of that occupied by railways and highways. If every town of 20,000 inhabitants possessed an aerodrome there would be 400 aerodromes in England and Wales alone.

IT was inevitable that unless aerodrome sites were secured without delay, not only would there be a marked rise in price, but in many instances sites would disappear through being built over. He was not stating what he imagined would happen, because he knew of at least one instance where it had already occurred. In the one to which he alluded, four years ago the site could have been acquired for £10,000, to-day the price demanded was £40,000.

THE saving of time which could be accomplished by flying was, in some instances nearly 75 per cent.

ON the whole, Lieut.-Col. Edwards' information was convincing, and cannot but do good service to the cause of aviation.

THAT was a fitting "thrill" for the movies, which came from Brussels via Paris the other day, of a trapeze artist hanging by a rope for several hours from an aeroplane 3,000 ft. up. It appears, so the report runs, that the performer having lost his balance owing to twisted ropes, managed to grasp one of the ropes, but was unable to regain his seat in the aeroplane. M. Vincent, the trapezist, had thus to hang on the while the pilot, Pettermas, "kept flying for hours through fear that in landing Vincent would be killed." Finally, towards dusk, a landing was risked which, it is stated, was carried out with such great skill that Vincent was able although numbed with cold and exhaustion, to drop to the ground uninjured, the aeroplane being then landed safely.

I WONDER how these feats find their way into the papers. And even if the details were mainly accurate, then, in my humble opinion, the more reason for ignoring such

fool stunts which lead nowhere, so far as aviation is concerned and generally result in reports of "another flying disaster."

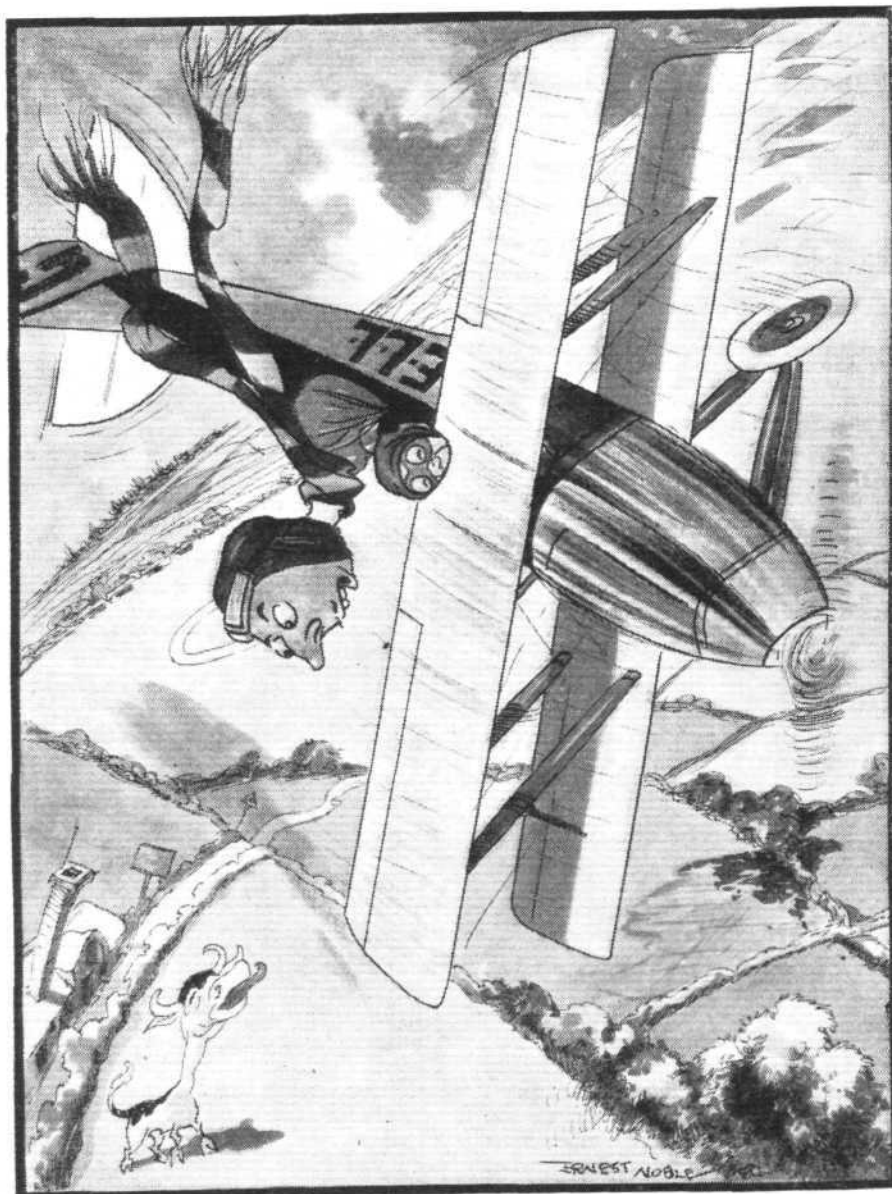
ONE would have thought safety from the cinema obsession would be found in air-journeys, but if report be not once again a lying jade, even that haven of rest is no longer to be exempt from the craze, as it is now announced that cinema shows will be one of the attractions (?) of the airship *Graf Zeppelin's* second flight to America, provisionally fixed for May 15.

IT is good hearing that the valuable aid of aeroplanes is being invoked for use by several of the candidates—In some Scottish districts where the constituencies are very scattered and wild, flying should be a particularly good asset, all types of transport, including motor-boats, rowing craft, cars, etc., being pressed into the service. Each new form of transport in the past has been utilised in its day, and now the turn of aviation has come to be added to its number—moreover, it is difficult to think of

any more practical method of inducing air-mindedness and appreciation of flying than its use under such normal conditions.

AS I foreshadowed recently, Pembroke Dockyard is to go over to the Air Ministry as an air station.

AROLUS.



OH, MOMENTS GREATER THAN YEARS—NO. 2: When the Instructor gives a demonstration of the fact "that you can do anything with the old Bus."

THE ROYAL AIR FORCE

London Gazette, May 7, 1929.

General Duties Branch

Pilot Officer on probation J. H. Manning-Fox is confirmed in rank (April 17). The following Flying Officers are transferred to Reserve, Class C:—R. Beresford (May 1); W. Woollett (May 5).

Chaplains' Branch

The Rev. W. R. Marsh, B.D., is granted a short service commn. as Chaplain, with the relative rank of Squadron Leader (May 1).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander C. C. Darley, A.M., to No. 1 (Indian Wing) Station, India, to command, 26.3.29.

Flight Lieutenants: J. R. I. Scambler, A.F.C., to No. 31 Sqn., India, 30.3.29. A. D. Davies, to Aircraft Depot, India, 2.4.29.

Flying Officers: (Hon. Flight-Lieut.) W. F. Humphery, to R.A.F. Depot, Uxbridge, 9.3.29. C. W. L. Trusk, A.F.C., to R.A.F. Depot, Uxbridge, 19.3.29. W. E. Gray, to R.A.F. Depot, Uxbridge, 5.4.29. J. W. Busted, to R.A.F. Depot, Uxbridge, 6.4.29. H. A. Castaldini, to Marine Aircraft Experimental Establ., Felixstowe, 9.4.29. G. Lambourne, to R.A.F. Depot, Uxbridge, 5.4.29. N. W. K. Seeman, to R.A.F. Training Base, Leuchars, 21.4.29. H. P. Hudson, to No. 101 Sqn., Bircham Newton, 24.4.29. L. S. Tindall, to No. 100 Sqn., Bicester, 24.4.29. (Hon. Flight-Lieut.) R. W. M. Hall, to No. 1 Flying Training Sch., Netheravon, 1.5.29. (Hon. Flight-Lieut.) H. W. A. Fox, to No. 3 Flying Training Sch., Grantham, 1.5.29. H. Thomas, to No. 2 Flying Training Sch., Digby, 1.5.29. L. W. Cannon, to Royal Air Force College, Cranwell, 1.5.29. A. E. Taylor, to No. 5 Flying Training Sch., Sealand, 1.5.29. N. R. Buckle, to No. 2 Flying Training Sch., Digby, 1.5.29. J. W. Duggan, to No. 3 Flying Training Sch., Grantham, 1.5.29. G. H. Godwin, to No. 3 Flying Training Sch., Grantham, 1.5.29. L. C. Bennett, to No. 5 Flying Training Sch., Sealand, 1.5.29. G. J. Powell, to No. 2 Flying Training Sch., Digby, 1.5.29. G. Bartholomew, to Royal Air Force College, Cranwell, 1.5.29. H. C. D. Hayter, to Royal Air Force College, Cranwell, 1.5.29. E. C. Lewis, to No. 5 Flying Training School, Sealand, 1.5.29. C. Warsaw, to No. 101 Squadron, Bircham Newton, 17.4.29.

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The follg. are granted commns. in Class AA (ii) as Pilot Officers on probation: J. C. E. Luard, M. Spurway (April 3); L. F. Stanley (April 8); S. H. R. Clarke (April 11); F. M. Walker (April 20); W. P. D. Bennett (April 22); T. H. Bevan (April 23).

R. Heathcote is granted a commn. in Special Reserve as Pilot Officer on probation (April 9); Pilot Officer on probation E. P. Swallow is confirmed in rank (May 2); Flying Officer F. S. Henderson is transferred from Class A to Class C (April 28); Flying Officer N. W. Wale is transferred from Class B to Class C (May 7).

Flying Officers: A. C. H. Sharp, to Aircraft Depot instead of No. 1 (Indian Wing) Station, India, as previously stated, 9.3.29. J. C. H. Tavendale, to No. 27 Sqn., India, instead of Aircraft Depot, as previously stated, 9.3.29. D. Dickson to No. 28 Sqn., India, 1.4.29. R. J. O. Bartlett, to Aircraft Depot, instead of No. 5 Sqn., India, as previously stated, 9.3.29.

Pilot Officer W. D. Butler, to No. 20 Sqn., India, 6.4.29.

Stores Branch

Flying Officer F. C. C. B. Hichens, to Aircraft Depot, India, 9.4.29.

Medical Branch

Wing Commander A. Grant, M.B.E., M.B., D.P.H., to R.A.F. Depot, Uxbridge, 26.3.29.

Flight Lieutenants: J. G. Russell, M.B.B.A., to Station H.Q., Northolt, 8.5.29. J. B. Gregor, to Central Medical Establ., Clement's Inn, W.C., 8.6.29. R. T. F. Grace, M.D., to R.A.F. Depot, Uxbridge, 19.5.29. R. Thorpe, to Central Medical Establ., Clement's Inn, W.C., 7.5.29. W. Heron, M.B., to R.A.F. Base, Calshot, 11.5.29. A. E. Vawser, to No. 3 Flying Training School, Grantham, 6.5.29. P. J. McNally, M.B., to Aeroplane and Armament Experimental Establ., Martlesham Heath, 6.5.29.

Flight-Lieutenants: F. P. Schofield, M.B., to R.A.F. Depot, Uxbridge, 5.4.29. R. W. White, to No. 2 Flying Training Sch., Digby, 24.4.29.

NAVAL APPOINTMENT

The following appointment was made by the Admiralty on May 2:—Lieut. (Flying-Officer, R.A.F.) H. N. M. Nangle, to *Courageous*.

IN PARLIAMENT

Pembroke Dock Air Station

THE FIRST LORD OF THE ADMIRALTY (MR. BRIDGEMAN) on May 8, in reply to Capt. Garro-Jones, said: It has now been definitely decided that the Air Ministry shall take over Pembroke Dockyard as an air station. The development of this, as of any other air base, must, of course, be a gradual process, but I understand that the Air Ministry are proceeding with the preliminary arrangements.

Imperial Airways Agreement

MR. VIANI asked the Secretary of State for Air what subsidy was paid to Imperial Airways, Ltd., for each completed flight, Cairo-Basra, during the calendar year 1927 and during the calendar year 1928?

Sir S. Hoare: The rate of subsidy in 1927 varied under the agreement, and was £1,200 for each of the first 52 flights, £900 for each of the next 26, and £300 for each of the balance of 12 flights completed. The rate in 1928 was £900.

Mr. Vian asked what particular aeroplanes and seaplanes have been lent by the Air Ministry to Imperial Airways, Ltd., for operation since 1924; on what dates were they handed over to Imperial Airways, Ltd.; and on what dates were they returned to the Air Ministry?

Sir S. Hoare: The following table gives the information requested:—

Name of Aircraft.	Date of Issue.	Date of Return.
Handley Page "Hamilton"	Nov. 27, 1924.	March 23, 1925.
Avro "Andover"	June 27, 1925.	July 25, 1925.
Vickers "Vanguard"	(1) Oct. 17, 1925. (2) June 1, 1926. (3) May 24, 1928.	Dec. 17, 1925. June 30, 1926. Oct. 24, 1928.
Supermarine "Swan"	June 9, 1926.	March 8, 1927.
De Havilland 54 "Highclere"	(1) Oct. 1, 1926. (2) Nov. 9, 1926.	Oct. 16, 1926. Feb. 1, 1927 (destroyed and written off charge).

TENTH R.A.F. DISPLAY

H.R.H. THE PRINCE OF WALES, whose interest in flying is so well known, has intimated that he hopes to be present at the tenth Royal Air Force Display at Hendon on Saturday, July 13. The Display will be held about a fortnight later than usual to enable visitors to London to attend, if they wish, the International Aeronautical Exhibition which opens at Olympia on Tuesday, July 16, as well as the Display. So keen was the demand for reserved accommodation in the stands last year that the authorities have decided to increase the number of stands to provide a total of nearly 12,000 reserved seats. New enclosures are also being provided which, together with existing accommodation, will allow more than 100,000 people to view the Display from inside the aerodrome. Reserved seats can now be booked at the offices of Messrs. Keith, Prowse and Co., who have purchased almost the whole of the accommodation in the stands, and from other agencies and libraries. Tickets for the 10s. and 5s. enclosures

Hydrogen-Kerosene Engine Tests

MR. VIANI asked what were the results of the tests on the hydrogen-kerosene engine purchased from the Airship Guarantee Co. in March, 1926; if he is now in a position to say whether or not the engine will be of any practical value; and how much money, including cost of purchase, has been spent by the Air Ministry on this machine up to date?

Sir S. Hoare: As regards the first two parts of the question, the hydrogen-kerosene engine has now been reconstructed in the light of the criticisms of departmental experts and has passed acceptance tests. This type of engine is still in an experimental stage, but it has certain features which may well prove it to be, when developed, the best suited for airship purposes. Further tests are at present in hand, but the process of developing any engine is necessarily a lengthy one. The answer to the last part of the question is approximately, £15,000.

AIR MINISTRY NOTICE TO AIRMEN

Kite Balloon Flying at Cardington (Bedford)

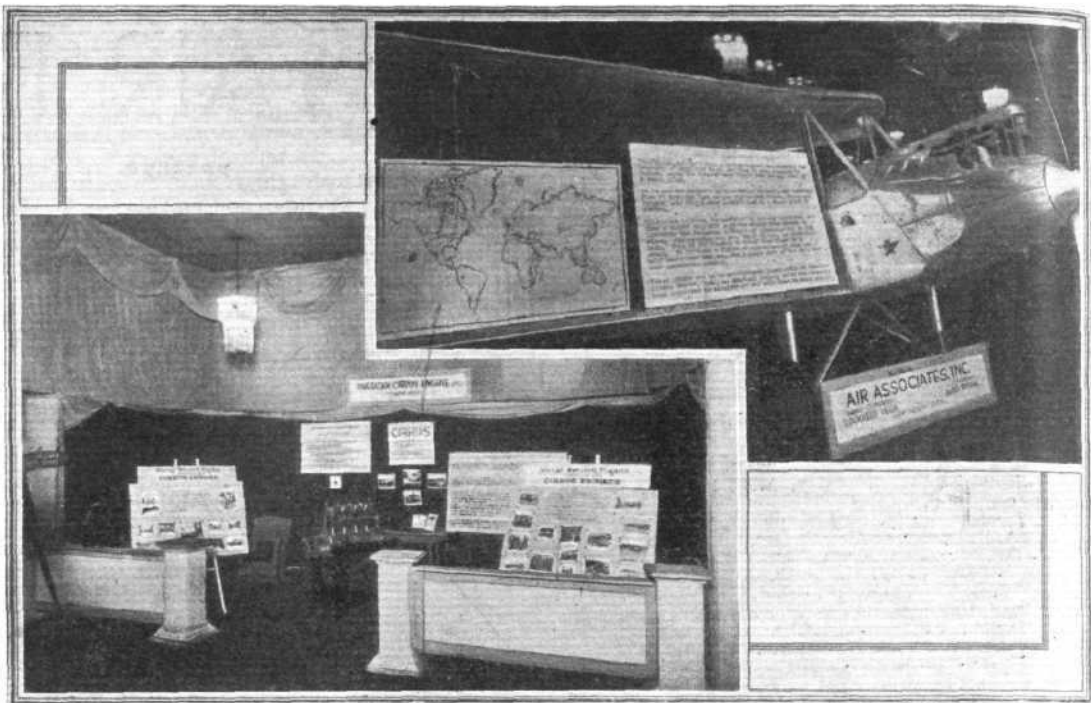
PILOTS are warned that for a period of three months a kite balloon will be flown from the mooring tower at Cardington (Bedford), at a height of about 1,000 ft. In addition to the main cable to the tower head, side guys radiate from the balloon to points on the ground 750 ft. from the centre of the tower.

(No. 27 of 1929.)

THE ROYAL AIR FORCE MEMORIAL FUND

THE usual meeting of the Grants Sub-Committee of the Fund was held at Iddesleigh House, on May 9th. Mr. W. S. Field was in the Chair and the other members of the Committee present were: Mrs. L. M. K. Pratt-Barlow, O.B.E., Squadron-Leader A. H. Wann. The Committee considered in all 18 cases, and made grants to the amount of £253 15s. 8d.

The British Aircraft Industry in America : On the left is the Stand of American Cirrus Engines, Inc., at the recent Chicago Aeronautical Exhibition, and on the right, on the Air Associates Inc. stand at the same exhibition, the Avro "Avian" (Cirrus III) formerly owned by Lady Heath. This machine is now owned by Miss Amelia Earhart, who recently flew it from New York to Los Angeles and back.



IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910.)

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1927 being given in FLIGHT, January 19, 1928.

	Imports.		Exports.		Re-exports.	
	1928.	1929.	1928.	1929.	1928.	1929.
Jan.	£ 1,220	£ 2,852	£ 157,598	£ 74,307	£ 330	£ 100
Feb.	£ 1,772	£ 6,532	£ 118,622	£ 195,369	£ 345	£ 2
March	£ 4,805	£ 1,210	£ 125,901	£ 204,664	£ 1,307	£ 902
April	£ 2,904	£ 5,816	£ 134,126	£ 186,477	£ 3	£ 115
	10,701	16,410	536,247	660,817	1,985	1,119

Test Pilot Killed

CAPTAIN RONALD SMITH, an English pilot employed as chief pilot of the company which manufactures Moth aeroplanes in the United States, was killed on Saturday at Lowell, Massachusetts, when the aeroplane he was testing crashed.

Blackburn "Bluebirds"

THE Blackburn Aeroplane Co., Ltd., have appointed Auto Auctions, Ltd., Horseferry Road, Westminster, S.W.1, as their sole concessionaires for the Blackburn "Blue-birds."

Useful Data on Alloys

THE Birmingham Aluminium Casting (1903) Co., Ltd., and The Midland Motor Cylinder Co., Ltd., of Smethwick, Birmingham, have published useful sheets giving data of the various alloys. In a few words, the main properties of the alloys, both general and physical, are given, together with recommendations as to their suitability for various purposes. These data sheets will be added to from time to time.

Versatile Morris Crane

HERBERT MORRIS, LTD., of Loughborough, have produced a new portable jib-crane which can move at right angles to a forward or backward movement, and also make all other angular changes in direction of travel throughout the whole 360 degrees. The 2½-ton size is shown in their folder, but smaller or larger sizes have similar characteristics in relation to their lifting capacity. As a petrol-electric crane or when fitted with a battery of accumulators, it is not tied down to any fixed source of power.

"Paraglare"

SPINTEX SAFETY GLASS, LTD., have produced "Paraglare" Rear Window, as a device for combating the glare of headlamps. It is splinterless and a non-discolourable product.

PUBLICATIONS RECEIVED

Lion Aero Engine (Series XIA). Air Publication 1342. H.M. Stationery Office, Kingsway, London, W.C.2. Price 3s. net.

The King's Regulations and Air Council Instructions for the Royal Air Force, 1928. Air Publication 958. H.M. Stationery Office, Kingsway, London, W.C.2. Price 7s. 6d. net.

Aeronautical Research Committee Reports and Memoranda. No. 1190. (Ae. 352) Wing Tunnel Experiments on the Design of an Automatic Slot for R.A.F. 31 Section. By F. B. Bradfield and F. W. G. Greener. August, 1928. H.M. Stationery Office, Kingsway, London, W.C.2. Price 9d. net.

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1927

Published May 16, 1929

34,417. AIRSHIP GUARANTEE CO., LTD., C. D. BURNEY and A. L. BIRD. Lighter-than-air aircraft and i.c. engines for use therewith. (309,969.)

APPLIED FOR IN 1928

Published May 16, 1929

1,268. F. W. LANCHESTER. Damper for eliminating torsional vibration in shafts of high-speed engines. (309,931.)
2,948. AIRSHIP GUARANTEE CO., LTD., and C. D. BURNEY. Means for berthing airships. (310,104.)
7,553. F. H. ROYCE. Cyls. of i.c. engines. (310,146.)
22,444. M. A. KENNEY. Aeronautical landing and launching apparatus. (299,698.)
26,038. BRITISH CONTINENTAL MOTORS, LTD. Means for actuating the sleeve-valves of radial-cylinder i.c. engines. (297,357.)

FLIGHT.

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C.2

Telephone: Holborn 3211.

Telegraphic address: Truditur, Westcent, London.

"FLIGHT" SUBSCRIPTION RATES

UNITED KINGDOM			ABROAD*		
	s.	d.		s.	d.
3 Months, Post Free	7	7	3 Months, Post Free	8	3
6 " " "	15	2	6 " " "	16	6
12 " " "	30	4	12 " " "	33	0

* Foreign subscriptions must be remitted in British currency.

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C.2, and crossed Westminster Bank.

Should any difficulty be experienced in procuring "FLIGHT" from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.



The Master of Sempill uses "BP"

When he landed on the Thames and took off again between Blackfriars and Waterloo Bridges on April 17th, Colonel the Master of Sempill used "BP" Aviation in his Blackburn Bluebird Sea-plane—the fuel he also used in his round Britain flight and on his journey from London to Berlin.

ANGLO-PERSIAN OIL CO. LTD
British Petroleum Co. Ltd, Britannic House, Moorgate, E.C.2
Distributing Organization

MISCELLANEOUS ADVERTISEMENTS.

Advertisements for this column should arrive at this office by Tuesday, 12 o'clock noon, to insure insertion. Special PREPAID Rate:—

18 WORDS or less, 3/-, then 2d. per word.

Display Caps Throughout, 1/6 per line.

Situations Wanted ONLY, 18 Words, 1/6.

1d. per word after.

All Advertisements to a Box No. 1/- per insertion extra.

AVIATION INSURANCE.

FOR INSURANCES of Every Description connected with Aviation, apply to BRAY, GIBB & Co., LTD., 166, Piccadilly, London, W.1. Enquiries welcomed.

CONSULTANTS.

THE Design and Production of "Lighter-than-Air" craft is a speciality of THE AIRSHIP DEVELOPMENT Co., LTD., 39, Victoria Street, S.W.1, Aeronautical Engineers and Consultants. Telephone: Victoria 6521/2 (two lines).

CONSULTING AERONAUTICAL ENGINEER—H. M. YEATMAN, M.A. (Cantab.), A.F.R.Ae.S., A.M.I.Ae.E., New Zealand Building, 429, Strand, W.C.2. Telephone: Gerrard 3672. All kinds of work in connection with the design, construction and operation of aircraft, Airworthiness, Certificates, etc. Technical advice for private owners a speciality.

PATENTS.

STANLEY, POPPLEWELL & FRANCIS, International Patent Agents, Jessel Chambers, 38, Chancery Lane, London, W.C.2. Telephone: Holborn 6393; Telegrams: "Notions, London."

A. P. THURSTON, D.Sc., M.I.Mech.E., M.I.A.E., F.R.Ae.S.

PATENTS, Trade Marks and Designs.—Bank Chambers, 329, High Holborn, W.C.1 Holborn 2542.

EAR DEFENDERS.

PREVENT injury due to excessive noise or change of pressure; small sounds heard as usual. Price, by post, 4/2 per pair.—THE MALLOK-ARMSTRONG Co., 39, Victoria Street, S.W.1. (NEW ADDRESS).

AIRCRAFT FOR HIRE.

HIRE AN AEROPLANE AND FLY YOURSELF. ANY DISTANCE. Full particulars.—BROOKLANDS SCHOOL OF FLYING, LTD. Telephone: Byfleet 437.

AIRCRAFT WANTED.

MODERN AIRCRAFT Purchased for Cash. Part exchanges for new machines.—BROOKLANDS SCHOOL OF FLYING, LTD. Telephone: Byfleet 437.

M.K. I. MOTH REQUIRED.—PHILLIPS & POWIS AIRCRAFT (Reading), LTD., 470, Oxford Road, Reading.

MACHINES & ENGINES FOR SALE.

MESSRS. PHILLIPS & POWIS AIRCRAFT (READING) LTD., who are Light Aeroplane Agents, are able to offer very easy HIRE PURCHASE TERMS for new or used aeroplanes.—Write, 470, Oxford Road, Reading.

IMPERIAL AIRWAYS invite offers for a Sea Eagle flying boat (one Napier Lion) complete with engine, amphibian gear and quantity spare parts. Certificate of Airworthiness renewed Jan. 1929. Cabin fully equipped. Inspection at Southampton by appointment.

CHEAP. Quantity Avro parts—Wings, Struts, etc.—110 Le Rhone and spares. Must sell.—Box No. 1706, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

METAL PARTS.

EVERY description of Metal Fittings for all kinds of Aircraft, Plate, Tube and Turning. Accuracy guaranteed.—THE AYTOUN ENGINEERING WORKS, Aytoun Road, Stockwell, London, S.W.

CLOTHING.

LEWIS'S FOR FLYING EQUIPMENT OF EVERY DESCRIPTION. Leather Flying Coats, 87/6, 110/-. Double Breasted, 65/-. 85/-. 105/-. New Flying Suits, all sizes, fitted fur collars, 60/-. Flying Helmets, best quality only, fur trimmed, 14/6. Flat or round type of phone, 5/-. Y-piece and Adapter, 3/3. Tubing and Rubber Connections, 3/-. Genuine Government Pilots' Gauntlets. Lambswool-lined Muffs, 12/6 per pair. Triplex Goggles of every description.—LEWIS'S, Leather Clothing Manufacturer, 19a & 27, Carburton Street, London, W.1. Museum 4793. No connection with any other firm.

WAINWRIGHT'S FOR FLYING CLOTHING. Contractors to Colonial and Foreign Governments. All clothing guaranteed. As supplied to the leading flyers of the day. Write for our special catalogue. Genuine R.A.F. Sidcot Suits, 5 ft. to 5 ft. 9 ins. only, 57/6. Best quality Leather Flying Coats in all styles, 85/-. 105/-. 126/-. Waterproof Flying Coats, lined teddy fleece and oilskin, 60/-. R.A.F. Sheepskin Flying Boots, all sizes, 25/-. R.A.F. Pilot's Gauntlet Gloves, 12/6. Flying Mask Goggles, unsplinterable, lined fur, 12/6. Inter-communication Earphones, complete connections and "Y" pieces, 12/6. Flying Helmets, trimmed fur, 12/6.—Inspect the largest stock of leather clothing at WAINWRIGHT'S, 300-302, Euston Road, London, N.W.1. 'Phone: Museum 6280.

Established over 30 years. The Leading House for AVIATORS' CLOTHING.

Fine quality R.A.F. pattern Chrome Leather Coats, fleece lined, 105/-. 120/-. Other styles from 77/6. Flying Suits fitted with fur collar, all sizes, 60/-. White Flying Suits, all sizes, 27/6. Mask Goggles, fur lined, 12/6. Featherweight Goggles fitted genuine Triplex, 7/6. Genuine R.A.F. Flying Gloves with lambs' wool pouch, 12/6. Flying Helmets, fur trimmed, 7/6, 10/6, 12/6, 14/6. Approved Air Ministry pattern Helmet, fits any head, best quality leather chamois lined, 19/6, 22/6. Genuine D.H. Phones, 12/6.

Illustrated Catalogue Post Free.

All goods sent on approval against cash or C.O.D.

Money refunded if not satisfied. We make and sell at the keenest prices.

D. LEWIS,

(Dept. F), 124, Gt. Portland St., London, W. Phone: Museum 4314.

Branches at SHEFFIELD, BIRMINGHAM & LIVERPOOL.

Save time by using the Air Mail.

SITUATIONS VACANT.

SENIOR and Junior Draughtsmen with first-class aircraft experience required.—Write, giving experience, age, salary, etc., to **HANDLEY PAGE, LIMITED**, Cricklewood, N.W.2.

WANTED. Ground Engineer, Licences "A" and "B." Factory experience essential.—Box No. 8207, c/o **FLIGHT**, 36, Great Queen Street, Kingsway, London, W.C.2.

ENGINEERS.—EXAMINATION SUCCESSES! FIRST-CLASS HONOURS! PRIZES! T.I.G.B. students win outstanding successes in practically all professional examinations—time after time they score higher pass percentages than all other candidates combined. Nearly 200 Engineering Correspondence Courses—the widest selection in the world—completely covering every worth-while qualification—A.M.I.Ae.E., A.M.I.Mech.E., A.M.I.E.E., A.M.Inst. B.E., Ground Engineers, etc., are in the **MAGNIFICENT NEW 112-PAGE BOOK**, "THE ENGINEER'S GUIDE TO SUCCESS." FREE to you on request. Write NOW. The T.I.G.B. Guarantees Training until Successful.—THE TECHNOLOGICAL INSTITUTE OF GREAT BRITAIN (Established 1917), 248, Temple Bar House, London, E.C.4.

SITUATIONS WANTED.

GROUND ENGINEER wants Permanent Job. Licensed "A" and "C," all types.—**JOHNSON**, 99, Nevill Road, Stoke Newington, London, N.16.

JOY-RIDING.

BRAND NEW AVRO 3-SEATER, 12 months C. of A., and first-class arterial road joy-riding field which advertiser cannot use owing to pressure of other business.—**BROOKLANDS SCHOOL OF FLYING**, Brooklands.

AIR SURVEY.

THE **AIRCRAFT OPERATING CO., LTD.**, 8, New Square, Lincoln's Inn, London (Holborn S131), and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America. Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles, **AEROFILMS LTD.**, Colindale Avenue, Hendon. (Colindale 6581.)

AIR SURVEY CO., LTD., 39, Grosvenor Place, S.W.1 (Sloane 6048), Monkey Point, Rangoon, and 12, Hungerford Street, Calcutta.

FOR SALE.

COLEY LTD. Aircraft Surplus. Special Offer:—K.L.G.F9 plugs, new, in maker's boxes, doz. 9/9; Ogilvie Airspeeds, pressure head complete, new, 7/9; Smith's Indicators, 600-2,600 revs., 3-foot drive, 22/6; Radiator Thermometers, Cambridge or Foxboro', 10/6; Cross Levels, 1/6; Dashboard New Spot lamps, 2-volt, length of wire, 1/9; Leather Helmets, R.A.F. Pattern, new, 5/-. Above postage paid. Free List obtainable.—**COLEY LTD.**, Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames. 'Phone 0365.

Anything in Rope, Wire, Canvas or Fabric Work.



17, Stoke Road, Guildford, Surrey.

MISCELLANEOUS.

AIRCRAFT REPAIRS. No job too small or too large. Complete reconditioning for C. of A. Full certificated staff—keenest rates.—**BROOKLANDS SCHOOL OF FLYING**, Brooklands, Byfleet.

WEAR AN AVIATION BADGE. See **AERO** Hire Special Displayed Advertisement, Page xxiv.

"AIRCRAFT"

Official Journal of the Australian Aero Club. 1/- MONTHLY. FEBRUARY NUMBER NOW READY, 1/1½ post free.—**FLIGHT** Office, 36, Great Queen Street, W.C.2.

ALAN COBHAM AVIATION Ltd.

150, New Bond Street, W.1.

'Phone: Mayfair 2908. 'Grams: "Talsundar, London." Surveys conducted for Municipal authorities and commercial undertakings. In addition to choosing the best possible site, we prepare a layout and can contract for complete equipment. **AERODROME CONSULTANTS.**

AIRCRAFT CAMERAS.

"**EAGLE**" Aircraft Cameras and Equipment Specialists in Air Photographic Apparatus. Full particulars from the manufacturers and patentees, **WILLIAMSON MANUFACTURING CO., LTD.**, Litchfield Gardens, Willesden Green, London, N.W.10. 'Phone: 0073-4 Willesden. 'Grams: "Kinetogram, Wilroad, London." Contractors to the Admiralty, Air Ministry, War Office.

AVIATION BOOKS.

- | | | |
|---|--|-----------|
| "Duralumin," | By LESLIE AITCHISON | 7d. |
| (<i>"Flight"</i> Library—Vol. II.) | | Post Free |
| "Flying," | By LT.-COL. W. LOCKWOOD MARSH, M.A. | 1/1½ |
| | | Post Free |
| "Æolus" (or The Future of the Flying Machine), | By MAJOR OLIVER STEWART, M.C. | 2/9 |
| | | Post Free |
| "International Aircraft Markings, Naval, Military and Civil," | | 2/9 |
| (Illustrated in Colour.) | | Post Free |
| "The A B C of Flying," | By LT.-COL. W. LOCKWOOD MARSH, M.A. | 2/9 |
| | | Post Free |
| "Motor Car Mechanism, Management and Overhauling," | By SHEPHERD | 2/9 |
| | | Post Free |
| "Pilot's 'A' Licence," | By JOHN F. LEEMING | 3/9 |
| | | Post Free |
| "Aerobatics," | By MAJOR OLIVER STEWART, M.C. | 5/4 |
| | | Post Free |
| "The Art of Flying," | By CAPTAIN NORMAN MACMILLAN | 5/6 |
| | | Post Free |
| "Dick Bird, Air Explorer," | A Book for Boys | 6/6 |
| | By FITZHUGH GREEN | Post Free |
| "The Strategy and Tactics of Air Fighting," | By MAJOR OLIVER STEWART, M.C. | 6/6 |
| | | Post Free |
| "A B C of Flight," | By W. LAURENCE LE PAGE | 8/- |
| | | Post Free |
| "Flying with Lindbergh," | By DONALD E. KEYHOL | 11/- |
| | | Post Free |
| "Civil Aviation" | | 13/- |
| | | Post Free |
| "The Law in Relation to Aircraft," | By LAWRENCE ARTHUR WINGFIELD, M.C., D.F.C., and REGINALD BRABANT SPARKES, M.C. | 13/- |
| | | Post Free |
| "The Great Trans-Pacific Flight," | The story of the "Southern Cross," | 13/- |
| | By KINGSFORD-SMITH & ULM | Post Free |
| "Twenty-five Years of Flying," | By HARRY HARPER | 13/- |
| | | Post Free |
| "Skyward," | By COMMANDER RICHARD E. BYRD, U.S. Navy. | 15/6 |
| | | Post Free |
| "The Baghdad Air Mail," | By RODERIC HILL, M.C., &c. | 18/6 |
| | | Post Free |
| "The Zeppelins," | By CAPTAIN ERNST A. LEHMANN and HOWARD MINGOS. | 18/9 |
| | | Post Free |
| "Aircraft Handbook," | By COLVIN and COLVIN | 20/6 |
| | | Post Free |
| "Airplane Design & Construction," | By POMILIO | 25/6 |
| | | Post Free |

All above are obtainable upon application to: "FLIGHT" Office, 36, Great Queen Street, Kingsway, W.C.2.

AIR TAXIS.

AIR TAXIS, LTD., Stag Lane Aerodrome, Edgware. Phone: Colindale 6307.

AEROFILMS LIMITED: Aerial Tours, Tail Work, Aerial Photography, Air Survey. Colindale Avenue, Hendon, N.W.9. 'Phone: Colindale 6581 (2 lines).

FLIGHT TUITION.

LEARN TO FLY AT THE MIDLAND AERO CLUB. Four tuition machines, two fully qualified expert instructors. No waiting.—Particulars, Hon. SECRETARY, 22, Villa Road, Handsworth, Birmingham.

BROOKLANDS SCHOOL OF FLYING provides expert tuition on AVROS and MOTHS. It has its own private accommodation for pupils and therefore is specially suited for those who want intensive instruction. 50 minutes by road or rail from Waterloo. West Weybridge Station is only three minutes from the Flying School. 'Phone Byfleet 437 for trial lesson.

THE DE HAVILLAND SCHOOL OF FLYING. Stag Lane Aerodrome, Edgware, Middlesex. Fourteen machines: Nine MOTHS, five advanced training machines. Seven Pilot Instructors, Lecture Classes, Restaurant and Recreation Pavilion. The largest and most up-to-date civilian organisation for flying tuition in the British Empire.

WHY PAY a year's subscription when you can learn in a month? Monthly subscription £1 is. No entrance fee. Cheapest tuition ever offered commences 1st April, 1929. No waiting list. Perfect aerodrome 65 miles from London. Comfortable Club Room and Bar. Moth machines. Annual Subscriptions Reduced to £3 3s. (Entrance Fee £1 is.) "LEARN AT LYMPE" with CINQUE PORTS FLYING CLUB.

SURREY FLYING SERVICES, Croydon Aerodrome (Telephone: Croydon 1736), have vacancies in their Flying School for Pupils at Moderate Rates. Avro Aircraft used. Residential accommodation at Aerodrome Hotel.

LEARN to fly MOTHS, AVIANS and SPARTANS quickly and cheaply. No waiting list.—Apply, SECRETARY, Hampshire Aeroplane Club, Hambledon, Southampton.

MAYLANDS AERODROME, near ROMFORD. 20 minutes from Liverpool Street. Tuition for "A" and "B" Licences at lowest rates. Avro machines. No waiting. Experienced instructors.—Apply, SECRETARY, Inland Flying Services Ltd.

"A" LICENCES mean joyous Summer time. Quality now at the **PHILLIPS & POWIS SCHOOL OF FLYING**, Reading Aerodrome. 40 minutes from Paddington.—Write, 470, Oxford Road, Reading. 'Phone: 469.

LT.-COL. HENDERSON, having now a large number of pupils, advises prospective clients to take early steps to secure a vacancy. Careful teaching and personal attention, combined with lowest rates in England (unsubsidised).—Write to **CROYDON AERODROME**.

TUITION.

WE offer sound instruction in Aeroplane Design, Fitting and Rigging, and Aero-Engine Fitting and Rigging; also expert training for Ground Engineers (Categories A, B, C and D) and Special Pilots (Licence B). Write to-day for our "Aeronautical Engineering" Booklet.—**INTERNATIONAL CORRESPONDENCE SCHOOLS, LTD.**, 182, International Buildings, Kingsway, London, W.C.2.

MODELS AND PARTS.

A. E. JONES, LTD. The Original House for Model Aeroplanes and Accessories; Quality always of the highest standard. Price List free.—97, New Oxford Street, London, W.C.1. Tel.: Museum 4090.

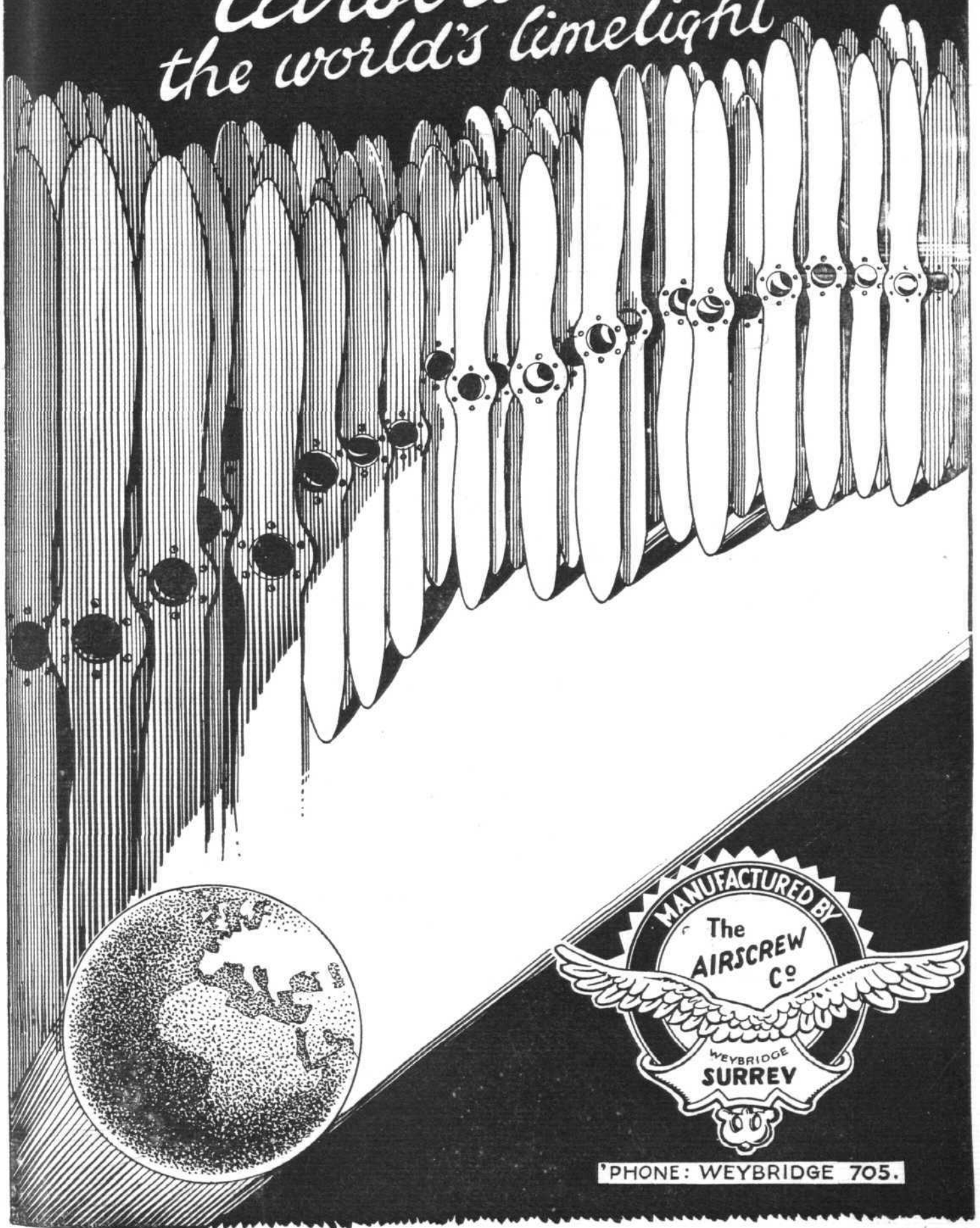
D.A.P. MODEL AEROPLANE CO. The Pioneer Firm for Models, Accessories and Materials. Scale Models a speciality. Catalogue 4d.—187, Replingham Road, Southfields, S.W.18. 'Phone: Putney 0636.

THE PARLIAMENT HILL MODEL AEROPLANE CLUB holds at Parliament Hill, Hampstead (weather permitting), Wednesday evenings and Sunday mornings, Flying Exhibitions, all types of models. Colonial and Provincial visitors will find these meetings of exceptional interest if interested in Model Aeronautics.

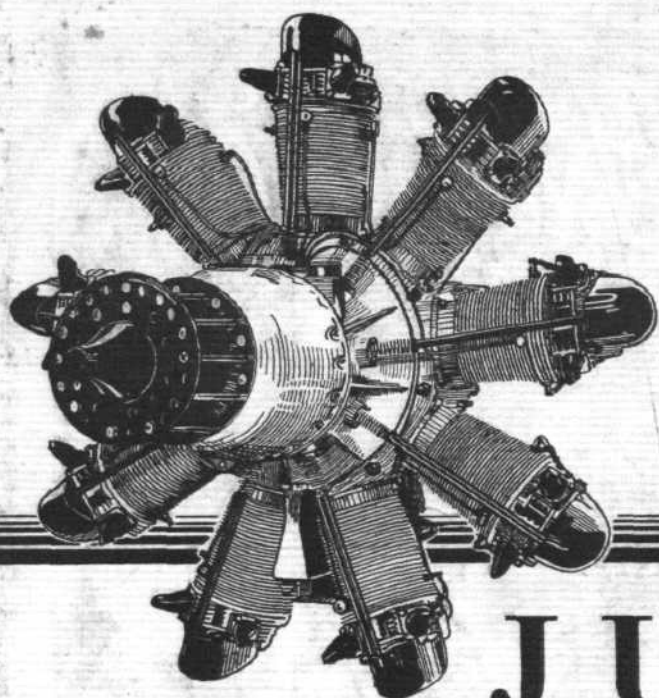
PATENT MODEL MANUFACTURERS, 139, Lymington Avenue, Wood Green, N.22, have just the model you are looking for. See next week's special display advertisement. 'Phone us, Tottenham 3278, if you feel you cannot wait.

Kindly mention "Flight" when corresponding with advertisers.

Airscrews in the world's limelight



Save time by using the Air Mail.



The

"Bristol"

JUPITER

THERE CAN BE NO BETTER
POWER UNIT INSTALLED IN
ANY AIRCRAFT TO-DAY.

The "Bristol" Jupiter Radial
Aircooled Engine is supreme.

A complete range includes—ungeared JUPITERS
of 6·3, 5·3, and 5 to 1 compression ratios; geared
JUPITERS of 5·8, 5·3 and 5·1 compression ratios;
and the gear-driven supercharged Series VII.
JUPITER.

"For reliability fit the Jupiter."

THE BRISTOL AEROPLANE CO., LTD., FILTON, BRISTOL.

Telegrams: "Aviation, Bristol."

Telephone: 3906 Bristol.

Printed and Published by the Proprietors, The St. Martin's Publishing Co., Ltd., 36, Gt. Queen Street, London, W.C.2. H. & S., Ltd.
Agents for the Colonies: GORDON & GOTCH, LTD., London, Melbourne, Sydney, Brisbane, Perth, Launceston (Tas.), Wellington (N.Z.), Dunedin (N.Z.).
Canada—45, Richmond Street East, Toronto. South Africa—CENTRAL NEWS AGENCY, LTD.
Entered at the New York Post Office as second-class matter.